The Mechanistic Principle
and
The Non-Mechanical

Carus

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The Mechanistic Principle and The Non-Mechanical

An Inquiry Into Fundamentals with Extracts from Representatives of Either Side

By

Paul Carus

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THE MECHANISTIC PRINCIPLE AND THE NON-MECHANICAL.

MECHANICALISM AND TELEOLOGY—A CONTRAST.

TWO world-conceptions stand in a strongly marked contrast to each other. One is the mechanistic, the other the teleological, and the struggle between the two is quite severe. It appears that in the combat no quarter is nor can be given. The former conception is held mostly by scientists, by men of thought who are accustomed to rigid method, by believers in theory; the latter by men of action, by jurists, preachers, moralists, reformers, poets, and all those who deal with the human will in practical life, among them also by sentimentalists, by all those to whom hopes and wishes are arguments.

The facts of our experience seem to favor both views in two different realms; the world of inanimate nature is a world of rigid causation where the laws of mechanics rule supreme, but the world of human action seems to make an exception. In the domain of social relations, the will seems to interfere with the mechanical processes of things and a new kind of causation is introduced, the causation of purpose. All mechanicalism means rigid necessity while the causation of purpose is directed by design and provident forethought.

All life pursues a purpose; even the smallest ameba wants to live. Its aim is self-preservation, and this tendency to self-preservation characterizes all life. Each liv-

ing being, the lowest as well as the highest, possesses wants and attends to them. It endeavors to maintain and preserve itself and to propagate its kind; even the highest and noblest animal, man, can do no more, although his self-assertion will aim at the perpetuation of his better self, his ideals.

How are we to explain this contradictory character of the facts with which we are confronted? The scientist claims that the mechanistic principle is and must be true throughout, and we are not prepared to contradict his proposition. On the other hand man *does* plan and design, and his designs determine the future. Are our views of purpose in the domain of life illusions? We are told by some scientists that just as there is no freedom of will, but absolute determinism, so there is really no purpose but only the results of mechanical pressure. The teleological party, however, takes the opposite view and finds purpose everywhere. Even the world of push, the mechanical movements of the stars, are said to be dominated by the purpose of a creator, and our greatest poets declare that ultimately there is a supreme will that governs all.

No one will deny that the world is an orderly cosmos, that the domain of life is characterized by the law of evolution, that the successive stages in the developmnet of rational beings as well as the history of mankind are predetermined, and a contemplation of the facts verifies the drift of this sentiment. Schiller says:

> "And a God, too, there is, a purpose sublime,
> Though frail may be human endeavor.
> High over the regions of space and of time
> One idea supreme rules forever.
> While all things are shifting and tempest pressed,
> Yet the spirit pervading the change is at rest."

And the poet laureate of the Victorian age echoes a similar idea saying:

> "Yet I doubt not, through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns."

This idea is deeply rooted in the human mind and it is a common conviction that if it had to be surrendered, life would lose its meaning and the world would be as dreary as a sterile desert; all our ideals would become empty dreams, religious comfort would be gone, art would become a vain show of sensuous beauty, and truth would change into an idle quest for a *fata morgana*.

The two propositions seem contradictory and yet we shall undertake to prove that in a certain sense both are rigorously true. On the one hand we claim that all causation is mechanical in the strict sense of the word according to the mechanistic principle; every cause is a motion, every result is accomplished according to conditions and circumstances by changes of place, and all processes that take place are transformations. On the other hand we accept the belief that not only men but even less highly organized creatures are purpose-endowed and above all that the regularities of natural laws, the lawdom of nature, is so intrinsic as to constitute evolution in both the inanimate and the organized domains of existence. This order of the universe is its most inalienable feature which shows itself in a definite direction of development, and in a growth with increasing purpose, a predetermined end or aim called *telos* in Greek, and though the world-order is not a man-made design, it may very well be compared to a plan and is analogous to a premeditated purpose; it acts like one and may be represented as such.

The philosophical term "teleology" is derived from the Greek word *telos* = "aim, end, purpose," and as a theory it assumes that there is design in the world. So far very little, if any, distinction has been made between the meanings "end" as the aim of a direction (in German *Ziel*) and "purpose" as a consciously designed end (in German *Zweck*), but such a distinction will be necessary. Everywhere in nature we see mechanically determined ends, but

not purposive designs. There is, as Germans would say, *Zielstrebigkeit,* a tendency to a predetermined end, but no *Zweckmässigkeit,* no purpose.

If the mechanistic principle is true, it stands to reason that every motion in the universe from the spinning of the tiniest atom to the development of the world as a whole must be dominated by regularity; everything must move in a harmonious order with unfailing consistency and toward a definite aim; or in other words the direction exhibited by all motion of the universe, its aim and end, its *telos,* is not superimposed upon it from the outside by an external power, an extramundane ruler, but is immanent; it is part and parcel of the cosmic constitution; it is as eternal as all the natural laws and is of an intrinsic character.

The mechanical laws of the world are applications of a general norm and this norm is the principle of consistency in motion. It did not originate, it is eternal; it is not God-made, it is part and parcel of God himself. What in religious language people call God, the ultimate authority of conduct, the standard of truth, the directive and formative factors of existence, is this eternal norm which constitutes the cosmic order. We might say that it is the irreversible will of deity which regulates not only this universe of ours but any possible universe. It is the law of nature as we know it, but it is also the law of any possible nature, and in this sense it is supernatural in the literal sense of the term.

PARTISAN SPIRIT.

The methods in the fight between the two opposing parties, the mechanicalists and the teleologists, have not been altogether fair. The representatives of the mechanistic theory generally ridicule the other party as unscientific. They belittle the significance of the human will and treat the consciousness of man's own importance and dig-

nity as a kind of megalomania. In comparison with the infinite expanse of the universe, how inconsiderable is this epiphenomenon of the human soul! Yet a great philosopher who wrote the first "General History and Theory of the Heavens," in which he expounded "the mechanical origin of the whole edifice of the world, according to Newtonian principles," in recognizing the contrast of the two views expresses his awe at two things: outside, the expanse of the starry heavens, and within the human soul, man's conscience. The former is a type of corporeal sublimity, the latter of the sublimity of moral greatness. This little and insignificant inner state within us, our own consciousness, our own will, our own aspirations, and last not least our conscience, the still small voice in man which tells him what he ought to do, affords a peep into the inside of nature. In man's soul appears the efflorescence of that enormous material universe, and here we have a revelation which shows us the meaning, or rather the end and aim, the *telos*, of all these motions and mechanical laws. There is no use in ridiculing the insignificance of this little epiphenomenon, or to declare its growth to be a result of chance; it is here and demands an explanation.

On the other hand the representatives of the teleological view are not less, but rather more, unfair than their adversaries. Many of them are preachers; they moralize and call their antagonists names. They denounce the mechanistic view as immoral, as irreligious, as lacking respect for everything higher and nobler, and treat it as an abomination. Forceful language is always impressive and has its advantages in argument, because it overawes with a show of authority, but if closely considered it never proves anything; on the contrary, it raises the suspicion that the cause for which it is displayed is not otherwise defensible. He who can convince his opponent by good arguments will

scarcely call him names. Only the man without reason turns rude.

As the mechanistic thinkers characterize man's spirituality as a kind of by-play, so the teleologists have only derogatory epithets for nature and the cosmic constitution. Both its laws and its forces are decried as "blind" and "brutal," and a machine is denounced as something utterly contemptible, an inferior thing that lacks intelligence and is dead. While it is true enough that a machine has no life in the sense of a living organism, we ought not to say that its mode of operation, the mechanism of its motion, and still less the mechanistic principle according to which it moves, is low or contemptible. On the contrary a machine is a triumph of mind, and it utilizes that grand constitution of the cosmos, its mechanical law, for a certain purpose which serves human needs. The laws themselves which are applied in the construction of machinery and which machines blindly obey have no eyes as human creatures have, but it would be wrong to have them characterized as blind. We might as well say that mathematics is dumb and dull because there is not any mathematics in itself possessing ears and the faculty of speech or other qualities of a living person. We know that it has not the consciousness of mathematical theorems after the fashion of a professor. Surely it is wrong to denounce these laws in terms of contempt. If we do not understand how to make a proper use of them, they are not brutal, but we are lacking in intelligence and suffer from our own shortcomings.

The theist's accusation that the laws of nature are brutal might be turned against his anthropomorphic God with much greater propriety, for if the forces of nature are brutal in allowing terrible accidents to happen in which many lives are lost, what shall be said of a God, endowed with an ego-consciousness and expecting to be worshiped by his creatures as all-wise, all-good, all-merciful, and also

as all-powerful? The forces of nature are forever the same, they serve the thoughtful if used properly, they destroy the thoughtless who do not utilize them to advantage. But think of a father who watches his children and allows them to drown without a warning, to be wrecked in foolish ventures, to burn to death or to perish in innumerable ways —simply for mysterious, presumably educational reasons! If that be the action of a fatherly God, of a God who in human fashion with a clear omniscient consciousness knows what he is doing, how shall we characterize his providence after having denounced natural forces as brutal?

The laws of nature are certainly not personalities, as the Greeks describe their gods in myth and fable. But while we do not believe that generalizations are conscious beings, we know that certain configurations of conditions produce results of a definite kind and the so-called laws of these conditions are truths; they are certain norms in the objective world, in the world of realities. These norms are highly significant as efficient factors which in the wide illimitable range of our experience have never belied our confidence in them; they determine the uniformities of phenomena with an intrinsic necessity; they make the world intelligible and are therefore illuminating. As they do not obscure the world but guide the course of nature, the word "blind" is misleading. Remember that these blind brutal norms of nature have produced the rationality of man, his foresight and his humanity.

The mechanistic idea is a demand of science which cannot be refused. If causation prevails at all it must be mechanical, but it has taken mankind thousands of years before this consequence of mechanicalism as a universal principle was stated in plain terms, and the first thinker who ventured to pronounce it clearly and boldly was Julien Offray de la Mettrie.

La Mettrie wrote a book entitled *L'homme machine* (published in August, 1747[1]), in which he defends the proposition that man is a machine in the sense in which Descartes had claimed that animals are automata.

La Mettrie's book is wittily written, but its arguments are somewhat crudely presented and we can not say that the author has handled his thesis in the proper spirit. He does not enter into the finer problems of intellectual and ideal life, and has not without reason been accused of vulgarity. Nevertheless we must recognize the boldness of his thought, and the heroic stand which he takes on a subject which was extremely unpopular and subjected the author to much persecution.[2]

La Mettrie's book shocked the world; its author was almost universally condemned and the book itself was denounced as the most infamous production of the human brain. Only a few great minds, foremost among them Frederick the Great, stood up for the lonely freethinker.

La Mettrie's proposition was by no means absolutely new, for the mechanistic principle is an old scientific ideal. The oldest philosophers we know of, the Ionian physicists and also Heraclitus, Democritus, Leucippus, and Epicurus, attempted to construct a world-conception on scientific grounds and to explain the origin of the cosmos on mechanistic principles. It is a consistent conclusion of thought to explain everything mechanically, but our scientists were not always conscious of it as the *sine qua non* of a scientific comprehension. Among the Romans the philosophy of Epicurus was upheld by T. Lucretius Carus in his well-known philosophical poem *De Rerum Natura*, but Cicero in his many writings repudiated both Epicurus and Lucre-

[1] The imprint on the title page reads 1748. See Bergmann, *Die Satiren des Herrn Maschine*, p. 14.

[2] La Mettrie's little book *L'homme machine* has been recently published in French and English by the Open Court Publishing Company, under the title *Man A Machine*.

tius and treated them with contempt as if they were below refutation. In consequence of this unpopularity the works of Epicurus are now lost while the poem of Lucretius has probably survived only because of its literary merits.

During the Middle Ages the scientific method of explaining life was entirely extinct, but with the Renaissance, the mechanistic conception began gradually to revive. Leonardo da Vinci seems to have seen its significance and Descartes actually speaks of animals as living machines, without however drawing the consistent conclusion that if animals are machines man himself must be a machine too. Here, however, he halts, and while he claims that man has a soul, by which he understands a kind of super-mechanical principle, he regards all other animals as soulless.

The mechanistic conception also found a most prominent supporter in Kant, who wrote his famous book on the "History of the Starry Heavens" in which he claims that, given matter in any chaotic state, he would show how on the principle of Newtonian laws an orderly world like our own would develop from it.

Kant discussed the problem of the relation of God to mechanical laws but it would take too much space here to enter into details, nor would a discussion of the subject be profitable in so far as Kant's conception of God has not been clearly defined.[3]

In modern times many scientists, among them, e. g., Jacques Loeb of New York, have taken the same stand as La Mettrie, and we will mention also that Mark Twain, America's greatest humorist, has joined their cause. We do not hesitate to say that progress in scientific discovery

[3] In defending the mechanistic explanation Kant does not deny God, but his explanations are stilted and difficult to condense. He opposes vigorously the view held by Epicurus and other materialists that the world order is the result of chance. In Gustav Wegner's *Kantlexikon* extracts on the subject appear on p. 239 (No. 338) under the caption "*Die Welt von Gott belebt oder ein Gott in der Maschine.*"

and in the explanation of nature's deepest problems is possible only by a strict adhesion to the mechanistic principle.

MOTION AND MOVEMENT.

Let us distinguish between motions and movements. By movements we understand the passive condition of being moved, while by motion we understand an active push. There is a common view that purely physical nature has no self-action, that it is moved. A horse or an animal may move about by its innate power, while a cart is being moved by the pull of the horse. The horse is alive, the cart is dead, and the changes which we observe in purely physical nature are frequently interpreted to be movements not motions. But is this really the case?

The chemical combinations of atoms according to their affinities are active motions in which different elements join, not because they are pushed by a power from the outside, but because in their innate nature they possess a tendency to combine with definite other atoms, and one affinity is overpowered by another stronger affinity, so that atoms far from being pushed and passively pressed into combinations, are themselves actively pushing; they seek and flee each other under definite circumstances according to definite laws, which laws however are nothing but general formulas descriptive of the character of the atoms. The atoms are the actors in this case, and the laws of nature simply describe what the actors will do under definite conditions. We have good reasons to believe that the affinities of the various elements will have to be explained ultimately from the forms of the atoms.

We will here incidentally remind the reader that the name "laws of nature" is really a gross misnomer. The laws of nature are formulas; they are descriptions, generalizations, or uniformities. They are called laws because formerly they were supposed to be enactments of a ruler,

they were thought to be the ukases of a czar, or the Good Lord's police regulations. But they are not laws superimposed upon the phenomena which they describe. The laws of nature do not compel things to act, but they are merely formulas of human invention, contrivances to characterize things, and to describe in general terms what certain things, chemical elements or what not, will do under definite conditions. The word "law" is an inappropriate term and has proved misleading because it suggests the idea that all things in the world suffer under the compulsion of an outside power, whereas in fact the several objects of existence do the acting themselves, and their acting is uniform under the same conditions. Things act, and the so-called laws of nature describe, they do not compel. Things act as they are, and they act of themselves in agreement with their own nature, not because there is a *vis a tergo,* a mysterious power that pushes them.

In the realm of living beings analogous conditions prevail; the cat will catch mice because that is her nature, and the bird of prey will swoop down upon the quarry, not because he is under compulsion, but because he is hungry and wants a breakfast. A thief will steal whenever the opportunity is offered, and an honest man will act honestly in accordance with his principles. There is no law nor any metaphysical agency, that forces them to act; they act in a special way, because that is their desire. All things will act according to their nature unless artificially interfered with, and it will be obvious that all motions are the expressions of the nature of things which move, while all movements originate by a transference of energy. The objects on which motions act are in a passive state; in their movements they suffer interference by an outside force. All *motions* are free, which means they result from the nature of the acting things; all *movements* are due to compulsion and both take place with mechanical necessity.

It becomes obvious that while there are movements in the world there must also be motions, for every movement is caused by a motion. Movements could never originate from themselves. The thing being moved suffers violence by another thing which does the active moving. Where a motion takes place there must have been a certain amount of stored up energy that is set free by some cause or other, and wherever there is a movement it must have acquired its momentum from a motion. Accordingly the ultimate start of the world in its simplest and most rudimentary beginning, must be due to a motion and can not have been a movement. Gravity can not be due to a push from the outside as Lesage tried to explain it. If however Lesage's interpretation were right, the pushing corpuscles would be the actors endowed with an intrinsic power of motion. The ultimate cause of the start of the world process—if there was any definite start at all, if the world process is not eternal—may have been the contraction of the ether into molar matter, into atoms first of the lighter, then of the heavier elements, as we see them originate in some stellar nebulas. Assuming that this contraction is a commotion in the primordial world-stuff it will naturally cause movements by pull or push, and the whole world becomes a combination of motions and movements.

One difference between a machine and a living organism is exactly this, that a machine makes movements while an organism manifests itself in motions; but both are mechanical and the law according to which they move is in either case in rigid agreement with the mechanistic principle. Closely considered this means nothing more than that there are no haphazard motions but everything that moves is regulated in its activity by harmonious uniformity.

Schopenhauer declares that the fall of the stone is practically the same as the will of man, and we do not hesi-

tate to say that the will of man is an incipient motion accompanied with consciousness; it is a tendency in an organism to move, it is the decision to do a certain thing. The difference between an act of the will and the fall of a stone is simply this, that the stone moves purely by gravity, while the will of man is determined by a motor idea, by a thought of accomplishing a purpose; and this motor idea is a tendency within the man, not a pressure outside of the man. It is a push from within, not a pull from without, and since both the fall of a stone and the will of man are incipient motions, we can with a poetical license allow Schopenhauer's saying to stand that the stone has the will to fall; only the stone is unconscious, while a man in action is pushing consciously. In him the motor idea acts as much as gravity in the falling stone, and both act according to mechanical laws—the laws of motion.

In line with Schopenhauer's idea that gravity is to be classed together with the will of man, we may conclude that gravitation is inexplicable except on a teleological principle, that gravitating bodies have a certain will, that they are not driven, not passively pushed, but that they actively push with an inherent energy towards an aim, and we can not help thinking that in a certain sense this is true. At any rate we are inclined to regard gravity as a motion, not as a movement.

Among the explanations of gravity we see only one which seems tenable; namely that all matter has originated by a condensation of the ether, the ether being the original material from which the world has been knitted into a sense-perceptible form. Now if the ether is, as is generally assumed, a continuous and immeasurably elastic medium, and if atoms, or perhaps even their ultimate constituents, ions, or electrons, or whatever we may call them, are little whirls producing some condensation, we are driven to the conclusion that the ether surrounding every such

condensation is thinned out, and so every tiny whirl produces a tension all around its center—which tension, according to *a priori* considerations of the nature of space, must exert a stress in the surrounding ether on all other such centers of concentration in direct proportion to the amount thus concentrated and kept in tension (constituting mass) and the inverse square of their distance; and this fulfils the conditions of the Newtonian law of gravitation.

If this be so, all matter is but a form of ether, due to condensations accompanied according to mechanical laws, with attenuations causing the tension between the contracted portions. Matter would thus have originated through the resistance which the ether offers to a commotion whirling through its immeasurable ocean. Matter then would not be dead stuff, but must represent an active reaction, in which its latent qualities are set free, and gravity would be a motion, not a movement. It would ultimately be a strain between two or more centers exercising a pull, and this pull would not come from the outside but reside in the strained condition of the contracted ether masses.

The tension would neither proceed from the masses alone nor reside in them alone, it would prevail in the whole system. The cause of the origin of mass producing the tension between masses might be compared to a cramp in the ether. This theory presupposes that the whole world, the whole ether-saturated ocean of existence, is one great coherent system of whirls, and necessarily the state of strain in this immeasurable ocean of ether would be simultaneous, which means the strain obtains between two or more or immeasurably many centers of gravitation, and wherever there are changes through a changed interrelation the whole strain changes simultaneously. There is not a change at one end which is transferred to the other end; the entire state changes and affects both ends, indeed

all ends, at once. Hence we may expect gravitation to be a force which is simultaneous in its action; or in other words, gravitation does not take any time to travel from place to place.

We are driven to the conclusion by *a priori* reasoning that ultimately there resides in all reality, and indeed in every particle of existence, an active power which moves and asserts its own being according to the form of its nature. It stands to reason that such is the case, only we must bear in mind that an intrinsic and positive self-motion should not be regarded as arbitrary, but as conditioned by its own form and surroundings, which relations are mathematically determinable. The principle that everything is moved by a push from the outside, by a *vis a tergo*, and that all things are inert and are moved about in a passive state is unthinkable.

We see in the world-play a self-activity which must have been active from the very beginning, and we feel compelled to believe that the very simplest and most primitive, the primordial commotions which start the origin of siderial systems, must be intrinsically autonomous or self-moving. There is an innate tendency of motion, a *vis viva* as former physicists used to say, in all existence and there is nothing real that is not actuated by such an inherent power.

THE WILL.

In the world of human life there is a distinction similar to that in the realm of physics. The real active will is an incipient motion, but there are also movements; and by movements in the domain of organized life we understand the actions of those who are influenced by others, the people whose minds have been taken captive by a leader. It is a special art to guide great multitudes and inspire them with

a motor idea that may turn out to be a powerful event in human history.

It is sometimes just as difficult to distinguish between motion and movement in the world of life as in the world of physics, and so it happens frequently that the very leaders have received their impulse from others, from their predecessors. Here too it might seem at first sight that there is only movement and no motion whatever, for all motor ideas have been impressed from the outside; and on analyzing the most original leaders in the world's history we shall be able to trace the sources of their ideals. The exponents of world-movements are mostly the results of the movements which they lead, not their causes. A certain need produces a want. The want clamors for relief and grows into a demand and the demand finds a spokesman for reform. Mostly it is true that while we think we are pushing, we are being pushed, as a German saying runs, *Du glaubst zu schieben, und du wirst geschoben.*

Nevertheless what is true of the physical world is true of the world of human endeavor. All movement presupposes motion. There must be a source of active energy back of any passive movement.

What is superimposed from the outside by an extraneous influence is not the energy of a movement but its direction. There are great amounts of energy stored up in the multitudes of the people, and wherever there are reasons for discontent their minds become inflamed and they can easily be guided by promises and the expectation of the fulfilment of their hopes.

The presence of the will in the souls of men is not a theory but a fact, and those who have to deal with people in a practical way and in actual life know it and act accordingly. Therefore the teleological view finds defenders among men of a practical turn of mind. They take into account aspirations, intentions, hopes and fears; they lead

and direct them as they deem desirable; they scarcely investigate the nature of the will, but they know that it exists; they take account of it as if there were no hitch in an intellectual comprehension of the will.

According to the nature of different impulses historic movements are guided or battled against, suppressed or favored. Considering that this is a fact of experience, who will deny the existence of the will, of human endeavor, and other teleological phenomena? We need not hesitate to say that will and purpose are a matter of direct experience in the world of human life; or can we really declare that all our longings and desires are mere illusions? Can it be true that we imagine that we act ourselves while in truth we are acted upon by impulses as by a *vis a tergo*, just as the wheels of an engine are turned by steam? We answer that the will in man is no fiction; it is a real and actual force; it is the motor power in us, but it moves with machinelike precision. This may seem paradoxical, but it is not, and to explain this paradox is the main problem of modern thought; in fact this has been the great question of philosophy ever since science dawned upon mankind.

The main trouble rises from the great interests that are at stake. If man is a machine, or less figuratively spoken, if all his actions are mechanical, i. e., subject to the same laws as machinelike motions, does he not cease to be accountable, does he not sink to the lowest level of inanimate nature, and does he not lose his dignity as a man, as a creature developed in the image of God, an incarnation of the deity? This fear has bewildered even sober thinkers and produces an otherwise inexplicable confusion of thought, so as to excogitate on the most flimsy arguments theories of the nature of man as different from other creatures, so that man's actions are believed to be of a mysterious supernatural kind and not subject to the universal laws of motion.

We believe, and if we wish to be consistent we can not help believing, that all motions in this world, and in any possible world, move in agreement with the laws of motion. In other words, all phenomena of motion take place according to the mechanistic principle. This is really a tautology; motions are mechanical and the atoms of a brain move and can not help moving in a definite way prescribed by the laws of motion, just as a stone falls to the ground and as the comets sweep through the heavens in perfect agreement with the laws of gravitation. However this truth is not contradicted by the fact that every living being, and especially man, is endowed with purpose.

In the history of mankind all our movements of reform, all our life and almost every detail of intellectual activity is purposive. We make ideals and we follow them up, we fight for them, and we accomplish our aims or fail. We see in the whole world of living beings a new creation of intellectual aspirations, resting upon the purely physical domain of existence. Will is not a mere delusion but it is a positive and undeniable fact.

We have devoted much thought to the problem and have reached a definite, and in our opinion, a final solution. Here in the face of these two contrasts we will outline our position as briefly as we can.

THE NON-MECHANICAL.

We have always been careful to say that the laws of mechanics apply to all motions, and we add now that they do not apply to conditions, or states, or qualities of things and thoughts which are not motions.

The mechanistic scientist as a rule overlooks the truth that although all phenomena of motion are determined by the laws of motion, there are features in this world which are not motions. As such features we designate mainly the entire psychological realm of feeling, and in this realm of

feeling there lies the domain of mind, viz., the significance of feeling.

First of all, what is a motion? A motion is a change of place, and changes of place belong to the objective realm of bodily things. So far as we are bodies we move about, but so far as we consist of sentiments and thoughts, motion has nothing to do with the nature of our soul.

Now we will ask, what is feeling? One thing must be granted: Feeling is not motion and motion is not feeling. We can not by any amount of logical or dialectic somersaults derive feeling from motion, nor motion from feeling. Things which originate from combination can not possess qualities which are alien to the whole class. A machine can not move unless there is a source of energy, and an object can not have weight unless its parts are material. New qualities originate, but they originate by combination and according to the laws of form. In Buddhist philosophy such structures are called in Pali *Sankhāra*, and in Sanskrit *Samskāra,* which has been quite properly translated in German *Gestaltung,* and in English "conformation."

The disparity between motion and feeling was recognized very clearly in ancient India in both religions, Brahmanism and Buddhism. The truth that motion is not feeling, and feeling is not motion, is explained by the example of a lame man and a blind man. The two go traveling together, the blind man with sound limbs (representing motion or objectivity) can move about and he takes the lame man (consciousness or subjectivity of feeling) upon his shoulders to direct him in his motions. Neither could travel by himself alone, but the two together mutually serve each other.[4]

From such considerations of the disparity between motion and feeling modern thinkers (I mention here first of

[4] *Visuddhimagga,* Chap. XVIII. Subjectivity is called "name" and objectivity "form." Both together (called "name-form" or in Pali *namorupo*) constitute the personality of man.

all Clifford) have, quite independently of the philosophers of ancient India, come to the same conclusion that feeling can not have originated from either matter or motion, but its conditions must have existed in a latent state in the nature of existence from the beginning. In other words, matter can not be merely the inert mass, and motion the dead change of place they appear upon superficial observation, but must contain the condition of consciousness, the germ of life as it blossoms forth in sentient creatures.

Leibnitz called attention to the radical difference between psychic states and objective bodies. If we could look into a brain, and could have it magnified so as to be able to watch the cerebral mechanism, yea if we could have it so greatly magnified that we could walk into the nervous structures and trace the processes of thought, we would see particles jostling one another and the impressions received would be similar to those which we have when inspecting a mill or the complicated machinery of a factory, but we would see only motions of material particles, we would nowhere detect feelings, or thoughts, or sentiments.

And why could we discover not the least trace of feelings? Simply because feelings and sentiments and thoughts are subjective phenomena; they are inner conditions, they are states of awareness. What our senses can see and observe and recognize are only objects and objective processes, and these processes will always present themselves as matter in motion. If a guide accompanied us through the factory of a human brain, he might tell us what the different functions accomplish. Let us assume that he would say, "Where the machinery begins to glow and emits a dim light, the activity of the jostling particles acquires awareness, and in yonder place where this glow accompanies the motion that starts the machinery of certain muscles, there are the operations of purposive will." In this way we might learn to decipher the meaning of the

several motions, but for all that we would neither see will, nor awareness, nor purpose.

Meaning is the most subtle quality with which feeling can be endowed and just as other feelings are impalpable and invisible, so meaning can never be an object of sense. If we read a book we decipher the letters and the words. The printed letters are symbols which reveal their meaning to the initiated, but the meaning itself is not a material nor a mechanical quality, and therefore by no chemical analysis of the paper or the printer's ink could the least trace of the meaning be discovered. Mind alone can decipher meaning in the symbols which it ensouls.

The physical phenomena which we observe in the objective world are objective, but feelings are subjective, and thus we must recognize that objective existence is not all of nature. There is another aspect which is the psychic side of it, the inside of things; and this inside, this subjectivity of existence, furnishes the elements from which under given conditions feelings originate.

These two features, feeling and motion, have sometimes been described as parallel to each other; and sometimes feeling has been called an epiphenomenon of objective reality; and again the two have been treated as identical, as one and the same thing, either with a spiritualistic or a materialistic tendency.

If the argument of the parallelism of feeling and motion is reliable, we must assume that on the one hand every objective existence possesses a subjectivity of its own, however low it may be in the purely physical domain; that on the other hand every subjective state has its objective realization, and the two correspond exactly, for they are the two aspects of one and the same thing, as are the inside and the outside of a curve. We look upon them as not the same but as inseparably belonging to each other, as analogous, as two different aspects of one and the same reality.

In a perfected state of physiology, we may be able to trace the transformations that take place in cerebral processes, and thus we may, on inspecting the commotions in the brain, mechanically explain how one feeling originates after another, and how the same forms of cerebral activity are associated with the same kinds of feelings, but we have no means of explaining mechanically the nature of feelings. The ophthalmologist for instance may trace the different states of color sensations, but on the one hand he will find no trace of the idea of motion in either red, or green, or yellow or other color sensations, and on the other hand the various forms of motion in the ether waves contain nothing of feeling. There is a correspondence, but the two corresponding sets are intrinsically different. We have a combination and also a cooperation of the lame man who can see and the blind man who can move. The former apperceives, the latter moves. In the domain of psychic phenomena, the mechanistic principle is checked, for mechanicalism can not trespass on grounds which in themselves are not motions. But for all that we can range the two sets of phenomena, the subjective states and the objective processes, in parallel columns side by side, and if the lame man can not walk he can *direct* the steps of his blind associate.

We will illustrate the situation by comparing the brain to a book. The spirit of the living brain consists in the meaning which the several feelings possess, and the spirit of a book is of the same kind. Meaning is an impalpable something; it is neither material nor mechanical, yet it is the main portion of a living person and of a book. Meaning is, as it were, the stuff of which spirit consists. Meaning is a factor in life the import of which consists in its tendency to signify and classify, to denote, to explain, to impart direction, to guide. The vehicle by which meaning conveys itself and renders interaction between two or more

minds possible is the symbol. Symbols stand for something; they are representative; they possess meaning, and the soul is a system of sentient symbols. There is nothing mysterious in the representativeness of symbols and yet the whole domain of spirituality rises from meaning; from this non-material, non-mechanical, non-quantitative, intangible phenomenon of picturing something else. Analyze a book, you can not discover its meaning in the most minute products of the analysis in the chemist's crucible. Dissect the brain of a man, you will never find his soul in the dissected parts. Measure all the motions of the nerves by the most delicate reaction apparatus, you will never lay bare the feelings themselves and still less that most subtle thing, the significance of feelings. We can measure everything that is objective, even the intensity of nerve reactions, but we can not measure what is not quantitative; we can not measure the qualitative values of subjective states.

TIME AND SPACE.

If a sentient being has developed into a thinking being through changing its sensations into representative feelings, it will in the course of time through the regularity of sensations acquire an expectancy of other feelings which will follow in a normal and consequential course, and thus the regularity of events due to the uniformity of natural phenomena will produce an anticipation of the future. Night always follows day, winter follows summer, and the succession of events is regular in innumerable other respects. Thus a living creature even at an early stage of its evolution gains the power of prognostication; it will form an idea of future events, and will naturally adapt itself to their arrival in a purely mechanical way.

We must insist, however, that an anticipation of the future is a thought which exists in the present. It is not the morrow which shapes the present, as says a prominent

teleologist,[5] but it is the *thought* of to-morrow which influences our action in the present. The thought of to-morrow has reference to the future, but under no pretext can we say that it belongs to the future, or that it takes place in the future, or that it is the future itself. It is based upon the past, and is part of the living present. The past is not dead, but is continued in all its efficacy in the present. It has shaped the present, lives on in the present, and the anticipation of the future is an outcrop of past experiences. In this way future events in a purely mechanical way cast their shadows before them, and thus purpose can and does originate in a mechanical universe.

The character of time is the succession of events, and the order of succession makes measurement possible. Measurement is a mental tool, invented for the sake of determining duration. The duration which is needed for the change from one event to another is expressed in units of time. The actuality before us is experience, i. e., events, transformations, successive changes, and the measurable duration of these successive changes is presented in our mind as time. Time, accordingly, the method of perceiving and determining duration, is ideal, while duration, the process to be measured by time, is actual.

The adjective "ideal" means partaking of the nature of ideas, implying that it is not an objective thing, but belongs to the realm of abstract thought.[6]

Time is only one abstract notion derived from the actuality of our experience, the other purely formal notion of objectivity is space. Space is in every respect analogous to time. Time is ideal, so is space. As time is eternal, so space is infinite. As time is constituted by the successive moments of motion and implies the possibility of meas-

[5] Prof. W. B. Smith in his article published in *The Monist* for January, 1913, p. 33.

[6] What is "ideal" need not be purely subjective. Compare the writer's book *Kant's Prolegomena*, pp. 186, 206, 214 *et passim.*

uring duration, so space is the field of motion and space yields us the opportunity of measuring distances. Time is as empty as space. Neither time nor space are concrete entities. They are not objects, not things, but relations, space being the juxtaposition of things and time the sequence of events. They are potentialities of action, and being potentialities they possess no limits, hence we call them infinite and eternal.

Schopenhauer looks upon time as that something which moment for moment renders futile everything under our hands. Time and the transitoriness of things frustrate all existence, and so time constitutes the vanity of all things. Schopenhauer says (*Parerga und Paralipomena*, II, § 143): "What has been, no longer is; it is no more than what has never been. But everything that is, in the next moment has already been. Therefore the most insignificant present has an advantage in its reality over the most important past, to which it stands in the relation of something to nothing."

This view is ingenious and sounds like a profound truth too true and too well known to deserve a restatement, and yet Schopenhauer misunderstands the nature of time. He looks upon time as an infinite series of isolated moments. Some of these, the past, are dead; they have existed but exist no longer and will never exist again. Others, the future, are not yet and never will be. Only the present, hovering between the two, is actual, and this present is vanishing under our hands. It has just come, and the next moment it will be no longer. Thus all is vanity.

Schopenhauer continues: "We enter existence suddenly to our own amazement after not having existed during countless millenniums, and after a short time we have as long a time again not to be. This is not at all right, says the heart; and even in the crude intellect a presentiment of the

ideality of time must arise from considerations of this kind."

Perhaps the heart is right in another sense than Schopenhauer means. His idea of the ideality of time is metaphysical. It implies that the present which is constantly vanishing is not real, but that some non-temporal eternity beyond time and space contains true existence. This is Plato's conception and it is true enough if it is understood as a poetic and allegorical representation of a great truth. But Schopenhauer, in looking upon the moments of time as separate items, draws a conclusion which Plato would not have endorsed. Schopenhauer declares that the past is gone as if it had never been. If that were true, why does the thoughtful man consider the future? Why does he not live exclusively in the present and enjoy the passing moment? Why should we trouble our children with school and the tedious work of their lessons? The truth is that the work done in the past is not gone as if it never had been, but remains with us, in the shape of blessings or curses. For the past is not dead; it lives on in the present and will continue in the future forever afterwards.

Like so many others, Schopenhauer forgets that the three aspects of time, past, present and future, do not consist of disconnected moments, that the three are one. He descants on the doctrine of the non-existence of the past and the illusory existence of the future, saying (§ 144): "Our existence has no basis nor ground on which to stand except the vanishing present. Thence it substantially has the constant movement towards assuming form without the possibility of the rest for which we continually strive. It is like the course of a man running down a mountain side who would fall if he tried to stop and can keep his footing only by continuing to run; likewise it is like a stick balanced on the fingertips; it is like the planet which would fall into the sun as soon as it stopped hastening uninterruptedly on

its way. Hence unrest is the type of existence. In such a universe where no stability of any kind and no permanent condition is possible, but where everything is seized in a restless whirl and change, where everything is hastening, fleeing, holding itself upright on the tightrope by constantly marching and moving, happiness is not in the least conceivable. It can not dwell where Plato's 'constant becoming and never being' may alone be found. First and foremost, no one is happy, but each strives his whole life long after a so-called happiness which he seldom attains and then only to be deceived; generally, however, each one finally puts into port shipwrecked and unrigged. But then it makes no difference whether he has been happy or unhappy in a life composed merely of a transitory present which is now at an end."

While it is true enough that restlessness is the type of existence, it is not true that it makes no difference what a man has done or experienced in life, whether he was happy or unhappy, whether he accomplished something good or evil; for we repeat that the past is not absolutely dead and the several moments of our life are not disconnected items which are gone as if they had never been. For the past endures in the present as a living factor, and the present continues in the future.

There are not three separate times: past, present and future; there is one time: it is eternity, for eternity lives in the unfoldment of time. The past is not eternally dead, the past dominates the present, it has formed the present, it continues to live in it and constitutes its character; the future is not, as has been claimed "never here"; the future is the present in its becoming, it is the living foetus in the womb of time; it is its bud before a full unfoldment. Like the past so the future is an essential part of the present, and in this way the Janus-headed time constitutes a trinity which is an indivisible unity with three aspects.

Time is the ever living present with one face toward the past, the other toward the future. We insist on the unity of time, to show that there are not three different kinds of time, one eternally dead, the second eternally dying, the third one forever and aye still-born. The past is the factor, the future the product, and the two touch in the present when the factor determines the product. The present in its connection with past and future is time, and time is eternal.

Among the best contemplations on time and space are Schiller's verses:

TIME.

"Threefold is the march of Time:
While the future slow advances,
Like a dart the present glances,
Changeless stands the past sublime.

(*Time as Future.*)

"No impatience e'er can speed him
On his course if he delay.

(*Time as Present.*)

"No alarm, no doubts impede him
If he keep his onward way.

(*Time as Past.*)

"No remorse, no incantations
Alter aught in his fixations.

(*Application.*)

"Wouldst thou wisely, and with pleasure,
Pass the days of life's short measure,
From the slow one counsel take,
But a tool of him ne'er make;
Ne'er as friend the swift one know,
Nor the constant one as foe!"

SPACE.

"Threefold is the form of Space:
Length, with ever restless motion;
Seeks eternity's wide ocean;
Breadth with boundless sway extends;
Depth to unknown realms descends.

(*Application.*)

"All three types to thee are given:
Thou must onward strive for heaven,

Never still or weary be
Wouldst thou perfect glory see;
Far must thy researches go
Wouldst thou learn the world to know;
Thou must tempt the dark abyss
Wouldst thou life's deep meaning wis.

"Nought but firmness gains the prize,—
Nought but fulness makes us wise,—
Buried deep, truth ever lies!"
(Translation by Bowring.)

CAUSALITY.

Time and space are the ideal aspects (or to speak with Kant, they are pure forms) of the real processes which we observe in experience. The order which prevails in these processes is called causation and the law of causation is causality. The problem of the evidence for the truth and the reliability of causality was first proposed by David Hume who doubted the necessary connection between cause and effect.

Hume proceeded from the sensationalist school of England and claimed that we observed constantly repeated concatenations of cause and effect, but he denied that a succession of cause and effect, if experienced ever so often, was any proof that in the future also the same succession would take place. So he turned skeptic, but he deemed the probability of the constancy of this connection sufficient to accept a belief in causality as a working hypothesis.

It is well known that Hume's skepticism set Kant to thinking, and he discovered that the certainty of our notion of causality is of the same nature as the certainty of mathematics, which means that it is purely formal. Accordingly he considered it an *a priori* truth as much as all other purely formal theorems—arithmetic, geometry, logic and pure nature-science. Kant took an inventory of our *a priori* knowledge which he discovered to be the condi-

tions of all experience and denoted them as transcendental.[7] All the store of our transcendental knowledge constitutes the possessions of pure reason.

We have come to the conclusion that Hume's conception of causality is wrong. Hume speaks of cause and effect as two "objects" that unvaryingly follow one another, and he was unable to find any reason why this should be so. We see in cause the initial start and in effect the final state of a certain event or process of transformation, and in this respect causality is identical with, or another aspect of, the law of the conservation of matter and energy. It is a purely formal statement, or to use Kant's nomenclature, an *a priori* doctrine, just as much as any arithmetical or geometrical statement, or as the logical principle, A = A.

The law of causation means that the sum total of existence remains the same. The sum total of energy and substance[8] of yesterday is the same as it is to-day and will be to-morrow. In other words, all changes that take place are due to motions, and every special case of causation which we investigate is contained within a certain field of observation; it is a mere change of form, a change of position, of configuration, of combination, of interrelation. There is first the initiative motion which enters as a disturbing factor and upsets the state of affairs in a given

[7] Kant's term "transcendental" has been the source of much confusion. By "transcendent" Kant understands what transcends our comprehension, what lies beyond it, in a word "the unknowable." Transcendental, however, is that which transcends experience as its condition. Pure logic is transcendental, mathematics is transcendental, space and time are transcendental. Logic is the condition of thought, and our notions of space and time are a transcendental esthetics—viz., the conditions of our senses, of our viewing things as objects in space and time. In Kant's phraseology, time and space are the forms of our *Anschauung*. (See on *Anschauung* the writer's *Kant and Spencer,* pp. 75-80). Things-in-themselves are according to Kant transcendent, but the purely formal sciences are transcendental. A belief in the transcendent is mysticism; but the realm of the transcendental is the arsenal of science; the transcendental furnishes us the methods of clear thought.

[8] We say "substance," not "matter," on purpose, for it is quite probable that matter is a form of ether, having originated as mass through the ether's resistance to energy.

system, viz., in our field of observation. We call it cause, and we trace the successive transpositions of parts, of the several portions of the system, until a relative rest is regained; and this new state of affairs, the final outcome of this transformation, is called its effect or the result.

Causation accordingly is a law of motion and every process of causation is necessarily mechanical. If all details were known, we could see in every single case how one change of place upsets the equilibrium of a state of things and leads to other changes of place. A cause which is not mechanical does not exist.

The reason why a cause may or must be efficient need not be mechanical, it is always a matter of form, viz., of arrangement, of configuration, of disposition, of structure. The cause itself produces its effect according to the laws of motion, but different arrangements, like different positions of a railway switch, impart to a motion different directions, and since different configurations in the domain of cerebral activity are ensouled with different meanings, the non-mechanical enters as an important factor in the world of mechanical events.

We have explained again and again the processes of causality as a transformation, yet the old traditional errors die hard and are still adhered to even by our friends who ought to be familiar with our work. Prof. William Benjamin Smith of Tulane University still continues to speak with Hume of cause and effect as "following each other"; yea he out-Humes Hume by declaring[9] that "they do not touch hands." If he had understood our view of causation he would know that they *do* touch hands, for they are not two things following each other, but the two together constitute one indivisible process and are two features of it,

[9] See Professor Smith's article "Push? or Pull?" in *The Monist* for January, 1913, p. 22.

the cause being the initiative motion, the effect the final state of one and the same process of transformation.

Hume speaks of cause and effect as two "objects following each other" and he finds that they have nothing to do with each other. He speaks of "strychnine" as "a cause" and "the dead mouse" as the result, and then he wonders what these two heterogeneous objects—strychnine and a dead mouse—have to do with each other. Naturally he is puzzled and grows skeptical. Had Hume contemplated the whole event as one process of which the cause would not be strychnine, but the eating of the strychnine, he would have seen how this initiative incident of transporting the strychnine into the stomach, affects the intestines and must result in the death of the mouse. If he had thus treated his problem he could not have doubted the connection between cause and effect. But he singles out two objects which are connected, the one with the cause, the other with the effect, and is puzzled.

What grievous mistakes such an unusually keen thinker can make! He shows his acumen by finding the problem and stating it, but in the attempt at solving it he fails most lamentably. Kant caught the right scent, he recognized the character of causality and classified it correctly with other purely formal notions. He diagnosed the case, but he failed to explain Hume's trouble. He proved that sensationalism was untenable, but did not cure the disease of skepticism, and he tinged philosophy with idealism by tracing the idea of causation back to the constitution of the human mind without investigating the origin and development of mind.

We see in causality a law of transformation, and we understand thereby not only the reliability but also the intelligibility of a necessary connection between cause and effect. We understand it to be based on the law of identity, and thus Kant is right to regard it as *a priori*. Noth-

ing has newly originated, neither substance nor energy; nothing has been lost. All we observe is a change of form, and it is the business of the scientist to trace the several stages of the process and to understand how one change of form gives rise to other changes.

We insist that causality being the law of transformation must be mechanical; it traces changes of place which follow successively step by step. Every prior change of place is the cause of the following one in a continuous concatenation; and the explanation is complete if we know in every detail how matter moves in space.

A general description of the essential features which make a cause effective is called the "reason," and the reason which is an answer to the question why certain results are produced is commonly called a law of nature. Reasons may refer to conditions which are not mechanical, but, for all that, causes remain motions, and while reasons may be logical, or geometrical or draw upon other non-mechanical domains to explain the efficiency of causes, the latter will remain mechanical.

A cause is always an event. It is a motion, a definite occurrence that takes place in a definite spot of space and at a definite moment of time; and it is a grave mistake to say with Hume that the cause is an object. Strychnine is not a cause. The eating of strychnine is a cause while its destructiveness of living tissue in any stomach is the reason of the effectiveness of the cause. The bullet is not the cause of a man's death, as Hume has it, but the vehement entrance of the bullet into his body is the cause of a laceration of his vital organs which results in death.

The whole process of causation is always mechanical and takes place according to mechanistic principle, because every transformation means change of place (motion) and a rearrangement of parts. This general law holds good for the simplest purely physical process as well as for the trans-

formations in the brain of a thinking man. There is no other way of thinking out clearly the meaning of causation.

Kirchhoff established a new conception of mechanics in his famous dictum that mechanics *describes* motions in the simplest and most exhaustive way, and it is noteworthy that he omitted in his definition the traditional term "cause." He no longer says that mechanics searches for the cause of the motions, but he simply says it "describes the motions." This strange procedure of Kirchhoff is obviously due to the metaphysical and erroneous conception which obtained in his days of the term "cause."

There has been much talk about different kinds of causes, as efficient causes, final causes, ultimate causes and a first cause, the latter having been identified with God as the cause of himself (*causa sui*); but this conception of the word "cause" rests simply on a confusion of "cause" with "reason." While causes are the incipient motions in a process of transformation, reasons are the general formulas which describe how certain causes take effect. Reasons may be more or less general, and we may consider a universal statement as the ultimate reason of a certain set of happenings. Causes are always concrete and definite; reasons are always abstract and general; causes are always mechanical in their actions, reasons are always argumentative or logical or explanatory.

The confusion between cause and reason has given rise to many errors in the domain of philosophy, and sometimes also in the heads of scientists. One of the worst errors is the belief in mysterious metaphysical causes which are assumed to live behind natural phenomena and account for them like the laws of nature with the notion lurking in the word "causes" that they, these metaphysical causes, are mysterious entities which have an existence outside and beyond the actual world in mystic domains as a transcendent extra- or super-natural essence. Kirchhoff misunder-

stood the term "cause" in this sense and so he denied the existence of causes.

If we properly understand the law of causality to be a law of transformation ultimately based on the theory that no change is due to the sudden appearance or disappearance of anything real, be it matter or energy, but that all processes are mere changes or transpositions of parts, and that new creations arise by a combination of particles in new forms, we shall see that the law of causation is a mere corollary to the mechanistic principle, and thus causality is in Kant's terminology an *a priori* truth corresponding to the logical law of identity. It means that nothing comes from nothing, and no reality, neither matter nor energy, can disappear into nothing. All that happens is transformation and is due to change of place.

It is obvious on the basis of this consideration that every portion of the causal nexus of events must be mechanical, which means that the mechanistic principle applies without any exception to all causes, and nothing is actual unless it is matter moving in space.

If this is generally true we must assume for instance that chemical processes must be regarded as due to molecular mechanics. On the other hand we know that reasons are general formulas; that they are ideas, not changes of place; that they are notions, not motions; and we must grant that the logical factors of our thought are neither matter nor energy and, as thoughts, have nothing to do with motions; nor can their explanations be derived from the mechanistic principle. How could we prove from mechanics the mortality of Cæsar which logic derives from the two premises, first from the universal law that all men are mortal, and secondly from the particular statement that Cæsar is a man? We prove logical statements by logical syllogisms.

THE SIGNIFICANCE OF FORM.

How then does the non-mechanical of the subjective domain of existence, our thoughts and ideas, enter into the mechanical world of objective reality, and how does the subjective aspect of organized beings influence the causal nexus of life? The fact is obvious that this is done, for our very existence as purposive rational creatures proves it, and the influence of the subject on the object is exerted in the same way as the subjective factors rise from merely potential existence into actual being.

Mentality originates by the representativeness of feelings. Symbols are the conveyers of meaning, and meaning is the quintessence of spirit. Where there are symbols there is spirit, and symbols possess definite forms; forms however are common to both spheres of existence, the subjective and the objective realms, for definite kinds of feeling correspond to definite forms of activity or of bodily appearance. In order to communicate a meaning we can do it only by a communication of symbols, by acoustic symbols or words, by written characters or letters, by dots and dashes in telegrams. But without symbols there is neither spirit nor the communication of meaning. The printing of a book or the writing of a letter will illustrate the important truth of the spirituality of the symbol and the non-materiality of spirit. The meaning conveyed in words, spoken or written, must find expression in objective symbols of a definite form, in air waves or in inky figures, but the meaning is neither the energy of the air waves, nor the ink of the written character. The meaning is qualitative, not quantitative; it depends upon the form of the characters used, not on the amount of energy or matter needed to produce the symbol, and form plays an important part in mechanics.

Difference of form means a difference in the factors

that guide a discharge of energy; the relationship of things imparts direction. The energy of steam in a boiler makes the engine go, but the position of the switch determines its direction. Our thoughts are sentient symbols which reside in definite forms of our brain structures, and these brain structures are efficient and transfer their activity according to their forms and the established associations in the nervous system. They determine our actions just as the cogs and levers of a machine will work in one or another way according to their construction, i. e., according to the form in which they are made and the relative positions in which they have been set.

Apparently form is the essential thing everywhere. Matter and energy are merely the material of which the cosmos is built, but the cosmos itself, its orderly realization, is in its form; the forms of existence make it what it is. Matter only renders things real, energy makes them actual, but form constitutes the essential feature of existence and contains its character. The possibilities of formation are inexhaustible; they are infinite, and for them there is no limit of perfection. All things are forms produced from the same aboriginal material; we ourselves are forms, and the form of our subjective nature, of our souls, possesses meaning. This meaning of our soul-forms is thought, it is mind, it is spirit.

At the start of the world-process the purely physical qualities of existence alone manifest themselves, but in the course of evolution life, sentiency, and thought develop, and every step forward is taken according to mechanical law. Such steps are: the origin of organized life as metabolism; the process of the preservation of form in the flux of organized life which is the base of memory; the origin of feeling by an organization of subjective states which is accomplished by the growth of a nervous system so as to enable an isolated feeling to come in contact with other

feelings, whereby feelings become conscious; the origin of mind which takes place when feelings acquire meaning; the classification of sense-impressions according to their physiological forms whereby automatically a logical system of genera and species is built up; also the development of language as the vehicle of abstract thought. Every one of these several phases in the development of the human mind is strictly mechanical; every one of them has originated in a mechanical way and finds an explanation of its mode of functioning in the basis of the mechanical principle.[10]

THE SELF-REALIZATION OF POTENTIALITIES.

There have been thinkers who on the ground of the mechanistic principle assume that the world must have some originator, a first mover, who is responsible for all the motions that take place, and especially for all that is good and noble in the world. His mental forethought must have determined the procreation of the world in all its details and especially in its final outcome or in the climax of its evolution, and the argument of this view is commonly and popularly formulated in the saying that the stream can not rise higher than its source.

This popular statement would make it quite plausible that in the evolution of life, the highest must be at the beginning, and the height of the beginning can never be reached during the process of life's history. But this need not be so; in fact it is not so. While nothing new can be created so far as substance and energy are concerned, there is decidedly a creation of new forms. The combinations that are possible contain not merely additions of parts, by external associations, but we meet also with fusions resulting in absolutely new things, possessed of new quali-

[10] Compare for a brief synopsis of these problems the author's pamphlet *The Philosophy of Form.*

ties, and this is an important truth which is frequently overlooked.

While the stream can never rise higher than its source it increases in size and in the capacity of being useful, and the lower it goes, the larger it grows. The source could not carry the pageantries of the world which the river accommodates in the harbor where its waters empty into the ocean.

It is not true that the primitive substance, the aboriginal world-stuff, must contain the seeds of all the possible creatures or things which come about by combination. A steam engine does not lie hidden in the iron of which it is constructed, nor is an organism contained in the molecules which constitute its parts. New combinations will produce new qualities which are absolutely absent in their component parts.

This is true not only in physics but also and primarily in the realm of pure thought. Kant investigated the problem of *a priori* synthesis. He asked whether or not *a priori* synthetic judgments are possible and he showed that the simplest arithmetical addition is of a synthetic nature, as for instance the statement $5 + 8 = 13$. The nature of the number 13 is not contained either in 5 or 8 but is something new, and the same is true of all the results in the domain of any of the purely formal sciences.

We do not evaluate mathematics from a mysterious geometry in and by itself, but we construct mathematics with the help of the elementary mathematical notions. When we make two lines cross each other in a plane, we produce an angle; and an angle is radically different from a line, being the inclination between the dierctions of two straight lines which is not contained in, and can not be explained from, the definition of the nature of straight lines. The same is true of triangles. The nature of a triangle has no more been deduced from straight lines

than has any other figure of geometry. We build up absolutely new and more and more complicated notions by making new combinations.

The same is true in objective reality, as for instance in chemistry. The chemist distinguishes carefully between chemical combinations and chemical mixtures. In a chemical combination different kinds of atoms are so fused together as to produce a new unity with new qualities. And with every advance of evolution new phenomena are created.

Some of the life processes can definitely be proved to be the same as other mechanical or purely physical or chemical processes, but we can not for that reason concede that life is throughout merely chemical or explicable by molar mechanics alone. Bio-chemistry has made great strides, but it will never be able to break down the barrier between chemistry and biology. There are certain features in the biological processes which are typically biological and can not be discovered in the realm of inorganic chemistry. Such processes are, for instance, the circuit of life known as metabolism, and in this constant flux the preservation of life-forms which furnishes the condition of memory, and assures the possibility of self-preservation (which is a preservation of form in the flux of metabolism) against the leveling influence of the surroundings.

There are everywhere phases of transition, but sometimes a slight modification creates the rise of a new kind of phenomena which as soon as perfected after a long preparation will show a great contrast to all other occurrences. Such a contrast originates in the appearance of animal life.

The gap between life and inanimate nature is even more marked than the gap between molar mechanics and chemistry, for in animal life we reach a new stage which displays the wonderful phenomena of sentiency. All the

processes in the domain of life are and must remain ultimately mechanical, but their mechanical nature is so complicated, much more complicated than the molecular mechanics of chemistry, and presupposes such new combinations that the life processes possess a character of their own. Under these circumstances we are justified in distinguishing between the various classes of phenomena and assigning to the different sciences domains of their own. There are other features present in vital phenomena which are absolutely absent in purely physical events, and among these features there is in animal life the appearance of consciousness and with it the rise of the will which means purposive motions. This feature increases with the progress of evolution and becomes so obvious that it may be considered as the characteristic quality of soul-life. A denial of it will prove vain, for the fact remains; and since the pursuit of purpose is so prominent in animal life, we may describe man, who has climbed to the top of self-consciousness, as the climax of purpose-pursuing animalhood.

The potentialities of existence, all the possible combinations of things or creatures which may or will originate in the course of evolution, exist in a latent state in the domain of pure form. They are mere applications of the eternal laws, so called, of the factors which direct evolution and constitute the world order, the divine dispensation which shapes the *telos* of the world, its aim and end. They are what Goethe[11] in reference to a passage in Plutarch[12] calls the mothers whose habitat is in the field of truth, a place not to be found in space, who move in a time which is above the distinction of past present and future, and breathe the air of eternity. These mothers are like the Platonic ideas and the matrices of Paracelsus.

[11] In *Faust*, Part II, Act I, Scene 5.

[12] *De defectione oraculorum*, 22.

The potentialities of existence unfold themselves according to the eternal laws of the cosmic order from the latency of non-existence into the actual life of self-realization.

The development of the world, with all the life it brings forth and the moral aspirations of rational beings, rising from the mere potentiality of existence into the nobility of a purposive thoughtful man, may be called the self-realization of God, of that eternal norm which dominates all that is, that ever has been and ever will be, of that which in its potentialities is infinite and inexhaustible. This norm is not material; it is purely formal. Nor is it an enormous amount of energy. Neither is it subjective or sentient; it is not a mysterious ego-consciousness; it is the formative principle of anything that might arise into existence; it is the potentiality of being, its law and the guidance of its formation. This norm is the eternal in the transient, it is the divinity of creation and the supernatural of nature. It is the factor that determines all things and it is He in whom we all live and move and have our being.

THE DIGNITY OF MAN.

There is no reason to decry the nature of man's mind as something low by pointing out that like a machine it works in a purely mechanical way. It is true that in this sense man is a machine, of course a living machine, but it is not true that his dignity is any way impaired by this truth, and this is an important point which ought to be discussed.

Man's dignity is not a question of fact nor of theory but merely of attitude, and yet it is for many reasons of great significance. This point, the dignity of man, implying also his responsibility for the actions he performs, is commonly treated as a side issue of the problem of the freedom of the will.

As we understand the situation we see nothing amiss in the truth that all happenings in the world, including the actions of man, take place according to the law of causation which is and must ultimately be mechanical. The intrinsic necessity with which all events take place does not mean a tyranny of some mysterious power called natural law. Necessity does not mean compulsion, and natural laws are not police regulations nor the ukases of a Czar; they are formulas summing up the essential features of processes; they are descriptions of what things or creatures will do according to their natures. The law of gravitation is not a force which drives the falling stone toward the center of the earth; it is a generalized statement of what masses will do and how they behave under given circumstances. And in the same way there are laws of a dynamics of the human will, according to which we can foresee and foretell how people of a certain character will act. An honest and noble man will in his pride and self-esteem prefer to drink the cup of hemlock rather than to slink out of the prison or cringe before his infamous judges with cries for mercy; and a villain will not shrink from theft or corruption or crime, but will be bold in action; he will not hesitate to be unscrupulous in his self-assertion.

Freedom of the will has often been doubted, but if there is no free will there is no will whatever. Every will is free, if it be will at all. Will ceases to be will if it is suppressed. Will that is not free can not act in accordance with the character of the willing person. Free will is synonymous with will.

Freedom of will means that people act, not arbitrarily, but according to their own nature without compulsion. If we know the nature of a person we can predict what he will inevitably and necessarily do under given circumstances, and prediction does not imply a suppression of

liberty. On the other hand the necessity with which free people act according to their nature does not mean that their will is unfree or that they are slaves—slaves of their own nature, subjects of their own will.

In Mark Twain's exposition,[13] the weakness of this theory that the will is not free comes out very plainly. Mark Twain claims that every man has in him a stern judge whose approval must be won, a tyrant and master who must be obeyed. We are our master's slaves. But who is this inexorable tyrant? It is our ego, it is the exponent of our personality; it is that which says in us *I*, it is the brain structure which pronounces a decision of our will, the final result of a deliberation of our wishes and fears and considerations. In a word this tyrant is we ourselves.

It is true enough that we can not help being what we are. A diamond is a diamond while grains of sand are common things, and they are what they are because the history of their origin and the circumstances under which they were formed made them so. A man is noble or vulgar because he has developed in this or that way. Nothing is what it is on its own account, or can claim any merit of its own. Nevertheless we esteem a diamond more highly than quartz crystals and we appreciate good qualities of human character. Our appreciation, however, should not exclude the recognition of the divine beauty that lives in the most common things in the snow crystals no less than in diamonds.

In all of us the cosmos lives. Everything has shaped itself in the mighty forge of existence, but there are different forms and they are by no means of equal value. Our past dwells in us as a living presence; it has made us what we are to-day, and quickens us in our actions. We are what we are because this is what under former

[13] See the chapter on "Mark Twain's Philosophy".

conditions we wanted to be. Our past actions, our former doings, have shaped our character as it is now.

Man possesses a dignity peculiar to himself. It consists in having reached a comprehension of himself. He has learned to judge his own will, he can approve his volitions, he can condemn them and he can form ideals. He can form a conception of what he wishes to be and this conception of his ideal self becomes a factor in his life. He can grow beyond his present self, he can improve. Rückert, one of the most thoughtful German poets, says:[14]

> "The type he ought to be
> Each one bears in his mind.
> Until that be attained
> He never peace will find."—Tr. by P. C.

Man establishes principles of action, to will or not to will this or that. According to conditions he either follows his principles or is remiss in his obedience to them, but in every case his own will plays a significant part in the development of his character, and it is therefore quite justifiable to hold him responsible for his actions. The feeling of responsibility and our neighbor's opinion of our responsibility are factors in our lives which strengthen our good intentions, while the idea of irresponsibility acts like a bane that paralyzes the will.

A man is not responsible for his actions only if he acts under compulsion against his own will, if he is intimidated by some external power, either by direct violence or a threat—in brief, if he is not free. In such a case his actions are not a genuine expression of his character.

We must remember that there is a difference between necessity or determinedness on the one hand and compulsion on the other. Everything is determined, even the decision of a free will. The will of a free man is determined by the man's character. There is no sense in defining a

[14] See the author's little book *Personality*, p. 7.

free will as undetermined or undeterminable or arbitrary. An arbitrary will would be the outcome of chance and as such it could have no moral value, no dignity, and would not convey any responsibility.

MAN'S DIVINITY.

Having come to the conclusion that man is a machine, Mark Twain was overcome by a great desolation because he saw the dignity of man dwindle away under the thought that man possesses no merit whatsoever. But what ground is there for dejection if man's actions really take place in accord with the mechanistic principle? Is man the worse that he is no exception to the common natural law, that his activity, like any other event in human nature, is subject to the law of causation? Even though the means by which nature, with the help of mechanical laws, attains her end to produce a rational creature be very simple, the fact of man's high standing in nature remains the same.

Here is the point which is of great importance, and which we wish to bring out. Man's divinity is not less divine because he has developed in perfect accord with the laws of nature; on the contrary, this very feature constitutes his divinity.

We understand by God "the authority of conduct" and the ultimate standard of goodness in the constitution of the universe. He who lives in agreement with the cosmic order is moral, he who infringes on it becomes alienated from the divinity of existence, and we must bear in mind that the laws of nature are ultimately mechanical. The laws of chemistry, of molecular mechanics and all other laws that regulate the order of events are simply applications in specially complicated fields. The simplest laws are not superseded in the more complicated conditions but expanded and specialized. The laws of social interrelations, of historic movements, of progress and evolution are not excepted,

and we do not hesitate to say that the multiplication table has more to do with justice and righteousness than a belief in special revelations or in mystical dogmas.

There is something holy about arithmetic and mechanics which would do us all good to appreciate. Any one who ventures into an investigation of mechanical laws will come to the conclusion that they present a grandeur of nature which is truly divine, a grandeur which shows a wondrous consistency and reliability, which always remains faithful to itself, which brooks no exceptions, and lies at the bottom of the grand cosmic order, so mysterious in its results and yet ultimately so simple. All the different happenings in the world are applications of the same universal principle, and all the differences of the various laws of nature are ultimately one and the same truth differently applied.

If we were omniscient we could trace the same mechanicalism everywhere in all happenings. We would be able to derive every special truth from the universal law of transformation by mechanical changes and predict what will happen under given circumstances even where we can have no personal or direct experience. The laws of mechanics give us a key to the riddles of all the events that happen in the universe, of the motions of atoms as well as the whirls of the galaxies of whole Milky Ways.

What is there mean or low in the domain of mechanics? How can we look down upon the harmonious order of all the moving bodies so as to make us feel ashamed of our own existence for partaking of this same disposition?

The dignity of man justifies us in speaking of the divinity of the cosmic constitution; and the grandeur of the cosmos justifies our belief in the dignity of man, for man is the highest creature of creation and in him we see the cosmic order reflected—or to use the language of religion, man is an incarnation of God.

Whether or not the transaction of the human will can be explained from mechanistic principles, the dignity of man remains the same, and as soon as we grant that man's appearance on earth is not due to an accident but to the proper working of natural laws, we grant that the rationality of man, which conditions his ability to adapt himself to the future, to direct his affairs, and to pursue plans, is a feature that has its counterpart in the cosmic order of natural laws, and the cosmic order is intrinsically characteristic of the constitution of the universe. All existence is dominated by laws, or better, it exhibits uniformities that render such an outcome, the procreation of rational beings, not only possible but necessary, and we can trace the progress of anthropogenesis step by step as produced by mechanical law.

What can there be unworthy in this truth?

THE UNIVERSAL AND THE PARTICULAR.

What surprises us mainly when we consider the worth of human personality is the particular, the peculiar, the individual character of every single man.

On the one hand we insist that all men are brothers, that we must respect in every individual person his humanity, those features which all men have in common, consisting in human rationality and the humaneness shown in their superior morality which raises them above the level of the beast. On the other hand we notice that no two persons are alike. Every one works out an idiosyncrasy of his own, and while we respect the general feature, the humanity of man, as the basis on which we recognize him as a brother, we appreciate at the same time that particularity which constitutes his individual character, his unique selfhood, his particular personality.

A herd of sheep is to us a number of pieces of living things—of wool and mutton. We do not care for the in-

dividualities of the different sheep. We ignore their particular traits except in so far as they have a bearing on their marketable qualities, the tenderness of mutton or the softness of their wool. They are to us mere numbers of equivalent units that can be expressed in pounds, and on account of our indifference most of us are unable to tell them apart. One sheep is to us like the other, but in reality they are individuals and are by no means absolutely like one another; for all things in this world possess individualities of their own, even though we are ignorant of the differences and may not be able to appreciate their variations.

It is remarkable that snow crystals have been photographed in large numbers, and yet there have not as yet been found two crystals which are alike. Every one possesses its own individuality, and we may add, a soul of its own.

The general law according to which snow crystals form is universal. The law is the same under any and all conditions. Everywhere we observe the hexagonal type which makes the crystal grow at angles of 60°, but while the law is general the variety of conditions must be so infinitely illimitable that every single speck of vapor forms a crystal of its own making, which however to a gross observation will seem like all the rest on account of our indifference to their varieties.

It seems to us probable that the same will be found true in all things. If we could see before us the atoms of gold we might not be able to find two atoms which are exactly alike, while all of them would be expressions of the same general law. And further what is true of the smallest particles of existence will probably be true of larger aggregates such as solar systems and planets. If we could search the heavens we would find it difficult to find two planets which would show the same conditions in their general

formation, and probably also in the development of life on their surfaces, and yet all of them would be subject to the same law, and all of them accordingly would have some characteristics in common with the rest.

The universe seems to be a world of universal law, and at the same time of a particular individuality of detail, and it appears that the wonder of this world of ours is the infinite variety of forms in spite of the rigorous uniformity which we call law. There is a universal order and yet a liberty of individual self-formation.

Mathematical space is the same all through and yet every point in it has its own special place. Why should not every speck of existence in the real world possess its own particular quality?

THE DIVINITY OF THE MECHANICAL LAW.

We stand midway between the two parties, between the mechanistic scientist and the teleological thinker. We recognize rigorously the mechanistic principle as applicable to all motion, but for that reason we do not deny that there is purpose in the world. Purposive creatures develop with mechanical necessity and their appearance in the cosmic process is significant. We even grant that the development of the world has a definite direction, a *telos* or aim, but we can no longer conceive of this aim as the design of a demiurge, of a world-builder, who after the fashion of a man has constructed the mechanism of the universe as a watchmaker makes a watch, and lets it run in a mechanical way, now and then interfering with the mechanism by what mortals call miracles. The direction of the evolution of worlds, of planetary systems and of the development of life on the several planets, is not a contrivance of an all-wise creator, but is determined intrinsically by the divinely grand immanent order of consistency, which is the foundation of all the uniformities of natural phenomena.

Our aim is to establish a rigidly scientific philosophy. We recognize only those truths which can stand the test of scientific critique. Nevertheless our philosophy is not anti-religious as science need not be anti-religious. We are conservative, for we see in religion a phenomenon that develops as naturally and necessarily as human society, the state and other institutions.

The several religions, foremost among them Christianity, are instinctive attempts to attain the truth needed for practical life. It is natural that such truths have been formulated in mythological tales and in allegorical dogmas, and it is but fair to judge dogmas and myths according to their meaning. Belief in the letter killeth, and the truth of religion consists in the spirit of its doctrines.

Not the least valuable doctrine of Christianity is the idea of God, but even here we are confronted with an allegory. The highest efflorescence in the universe is man and so it is quite appropriate to represent God, the All-being, the highest and absolute authority to which we must conform, under the simile of a human personality, as a king or a father. This has been done in Greece where the Homeric heroes begin their prayer "*Zeu Pater*"; in Rome were Jupiter, i. e., Jove the father, is worshiped; in ancient Persia, in Judea, in Christianity, in China (where God is called *Shang Ti* = the emperor on high) and elsewhere. But this God-conception must not be taken literally, for God is not and cannot be an individual personality; God is super-personal. He is not a person in the sense of a concrete human personality, with human limitations in space and time, with successive thoughts, deliberations and final decisions. His thoughts are the eternal norms of existence, called laws of nature by scientists, and wherever there is a truth that has never originated and will never pass away it is a thought of God, for God is the ultimate

norm of truth, the ultimate standard of goodness, the prototype of right, the authority of moral conduct.

If God were an individual being, there would be above him the divinity of the eternal norm of all order. A divine individual, were he ever so grand, would be *a* god, not God, and if we call a god-individual "God" there would be a higher authority above God, there would be the Over-god, whose norms this individual god-being would have to heed, a view which would lead us to fantastic and mythological ideas. Accordingly it will be soberer and truer to reserve the name God for that absolute Divinity who is the normative factor that shapes the world and who at the same time remains to all his creatures the ultimate authority of moral conduct.

The world with all its wonderful display of life is the result of the cosmic order. There is an eternal law that shapes its *telos,* its aim and end. It is the divine dispensation according to which from the very beginning the springs which prompt existence unfold themselves and manifest their inmost meaning. Thus existence tends with mechanical necessity to realize itself, and in doing so it manifests the divinity of the world order whose most general features are mechanical.

The intrinsic nature of the world order is best understood by a contemplation of the order that prevails in all the purely formal sciences, in mathematics and logic, in arithmetic and algebra, which is most obvious and presents itself visibly to the eye in geometry. If there is anything that deserves the name supernatural we must grant this term to these purely formal sciences or rather to the truths which they reveal. They hold good not only in nature as it presents itself to our experience, not only in this world of ours in which we live, but in all possible worlds which might exist anywhere or anywhen, and they will remain true even if nothing existed at all.

The direction of all motion of the world is not artificially imposed upon it from the outside, it is immanent; and the appearance of rational purpose-ensouled beings is a necessity in the development of life, because the cosmic order renders the growth of rationality necessary. Rationality as a matter of truth, is nothing but the recognition of the cosmic order and the practical application of this recognition, the recognition of the cosmic order, of the nature of causation, of the mechanistic principle, changes wild haphazard motions into the provident actions of a purposive will.

We reach the conclusion that a belief in the divinity of man, in his responsibility and in his freedom, is quite justified, even on the recognition of the mechanistic principle, and that the popular errors held about these ideas on either side, from the teleological and from the mechanistic standpoints, are mistakes which by no means touch the essential truths which obtain in both.

A deeper investigation into the constitution of existence and the significance of natural, and especially mechanical, laws proves that a scientific interpretation of the facts will by no means degrade the character of man or give us cause to embrace a dreary pessimism. The laws of mechanics are the most general laws of the universe. Nothing moves, nothing stirs nor happens that does not act in agreement with the laws of motion, and there is no harm in it that man's activity takes place in perfect agreement with mechanical laws.

A man's a man for a' that!

MARK TWAIN'S PHILOSOPHY.[1]

WHAT IS MAN?

MARK TWAIN wrote a book entitled *What is Man?* but he kept the fact a secret for it was not published until after his death. It was printed in New York at the De Vinne Press in an edition of two hundred and fifty copies, during July, 1906. Its copyright dates from the same year and it is prefaced under date of February, 1905, as follows:

The studies for these papers were begun twenty-five or twenty-seven years ago. The papers were written seven years ago. I have examined them once or twice per year since and found them satisfactory. I have just examined them again, and am still satisfied that they speak the truth.

Every thought in them has been thought (and accepted as unassailable truth) by millions upon millions of men—and concealed, kept private. Why did they not speak out? Because they dreaded (and could not bear) the disapproval of the people around them. Why have I not published? The same reason has restrained me, I think. I can find no other.

The book is published under Mark Twain's own name, Samuel Langhorne Clemens. This is significant, for here Mark Twain does not speak to us, but Mr. Clemens; not a humorist, but the man himself who has written under the pseudonym "Mark Twain." This book is not for our amusement, but for our instruction. Here our

[1] Because the quotations from Mr. Clemens are the most important feature of this chapter, they are printed in large type while our own considerations and objections appear in more modest size. Thus indicating difference of authorship by difference in type we can dispense with the use of quotation marks in the main selections from Mark Twain.

author does not mean to make jokes, he is serious. He is too serious to make any attempt at giving his treatment charm or pleasing form. How easy would it have been to treat the subject in the happy style of his unexcelled humor! He absolutely abstains from all jollity for to him the truth which he preaches is sad, very sad; he claims that man is a machine—nothing more.

The treatment of this subject is keen in argument but dull, in parts it is extremely dull, and dry in style. It is cast into the form of a monotonous conversation between an old man representing himself, Mr. Clemens, in his matured years, and a youth who is unwilling to recognize the truth. He says:

The Old Man and the Young Man had been conversing. The Old Man had asserted that the human being is merely a machine, and nothing more. The Young Man objected, and asked him to go into particulars and furnish his reason for his position.

NO MERIT IN A MACHINE.

A machine has no merit. An inferior machine—say one manufactured of stone—cannot help being inferior and a superior machine does not deserve credit for being better. The conversation continues:

Old Man. What could the stone engine do?

Young Man. Drive a sewing-machine, possibly—nothing more, perhaps.

O. M. Men would admire the other engine and rapturously praise it?

Y. M. Yes.

O. M. But not the stone one?

Y. M. No.

O. M. The merits of the metal machine would be far above those of the stone one.

Y. M. Of course.

O. M. Personal merits?

Y. M. Personal merits? How do you mean?

O. M. It would be personally entitled to the credit of its own performance?

Y. M. The engine? Certainly not.

O. M. Why not?

Y. M. Because its performance is not personal. It is a result of the law of its construction. It is not a merit that it does things which it is set to do—it can't help doing them.

O. M. And it is not a personal demerit in the stone machine that it does so little?

Y. M. Certainly not. It does no more and no less than the law of its make permits and compels it to do. There is nothing personal about it; it cannot choose. In this process of "working up to the matter" is it your idea to work up to the proposition that man and a machine are about the same thing, and that there is no personal merit in the performance of either?

O. M. Yes—but do not be offended; I am meaning no offense. What makes the grand difference between the stone engine and the steel one? Shall we call it training, education? Shall we call the stone engine a savage and the steel one a civilized man? The original rock contained the stuff of which the steel one was built—but along with it a lot of sulphur and stone and other obstructing inborn heredities, brought down from the old geologic ages —prejudices, let us call them. Prejudices which nothing within the rock itself had either power to remove or any desire to remove. Will you take note of that phrase?

Y. M. Yes. I have written it down: "Prejudices which nothing within the rock itself had either power to remove or any desire to remove." Go on.

O. M. Prejudices which must be removed by outside influences or not at all. Put that down.

Y. M. Very well: "Must be removed by outside influences or not at all." Go on.

O. M. The iron's prejudice against ridding itself of the cumbering rock. To make it more exact, the iron's abso-

lute indifference as to whether the rock be removed or not. Then comes the outside influence and grinds the rock to powder and sets the ore free. The iron in the ore is still captive. An outside influence smelts it free of the clogging ore. The iron is emancipated iron, now, but indifferent to further progress. An outside influence beguiles it into the Bessemer furnace and refines it into steel of the first quality. It is educated now—its training is complete. And it has reached its limit. By no possible process can it be educated into gold. Will you set that down?

Y. M. Yes. "Everything has its limit—iron ore cannot be educated into gold."

O. M. There are gold men, and tin men, and copper men, and leaden men, and steel men, and so on—and each has the limitations of his nature, his heredities, his training and his environment. You can build engines out of each of these metals, and they will all perform, but you must not require the weak ones to do equal work with the strong ones. In each case, to get the best results, you must free the metal from its obstructing prejudicial ores by education—smelting, refining, and so forth.

Y. M. You have arrived at man, now?

O. M. Yes. Man the machine—man the impersonal engine. Whatsover a man is, is due to his make, and to the influences brought to bear upon it by his heredities, his habitat, his associations. He is moved, directed, *commanded,* by exterior influences — solely. He originates nothing, not even a thought.

Y. M. Oh, come! Where did I get my opinion that this which you are talking is all foolishness?

O. M. It is a quite natural opinion—indeed an inevitable opinion—but you did not create the materials out of which it is formed. They are odds and ends of thoughts, impressions, feelings, gathered unconsciously from a thousand books, a thousand conversations, and from streams

of thought and feeling which have flowed down into your heart and brain out of the hearts and brains of centuries of ancestors. Personally you did not create even the smallest microscopic fragment of the materials out of which your opinion is made; and personally you cannot claim even the slender merit of putting the borrowed materials together. That was done automatically—by your mental machinery, in strict accordance with the law of that machinery's construction. And you not only did not make that machinery yourself, but you have not even any command over it.

Y. M. This is too much. You think I could have formed no opinion but that one?

O. M. Spontaneously? No. And you did not form that one; your machinery did it for you—automatically and instantly, without reflection of the need of it.

THE NATURE OF SOUL AND MIND.

Mark Twain is a good reasoner, but like so many professional philosophers he falls into the trap of his own nomenclature. He personifies abstract ideas. His terms such as "mind" and the "ego," become independent beings, and he has much to say of the task-master, of the stern judge whose approval every one seeks. But are not our mind and the stern master whose slaves we are, parts of ourselves? This stern master is the ultimate court of appeal which has originated in the course of the development of our humanity with unavoidable necessity; he is the climax of our moral evolution. Every man has his own master who is his better self, representing self-control, and the height thus attained is different in different persons. What the master decides is our own decision.

We are told that our stern master is a terrible tyrant; that if we do a good deed we do it because he compels us to do it; and if we are drunkards or thieves or murderers, we are such and act accordingly at his behest. We are not free, we are his slaves.

Let us restate the facts not in the mythological description of Mark Twain but as they really are: Man's mind is a complex multitude of ideas more or less systematically arranged. There are sensations and different centers of various sensation, there are motory

centers, there is a language center, there is a special supreme ruler of the whole empire. He calls himself in common language "I," and this "I" (in philosophical language called *ego*) is practically what Mark Twain calls our master.

Now let us bear in mind that man's soul is a very complicated organism and consists of many different motor-ideas which press into action. They are relatively independent and sometimes irrepressible. As they are by no means agreed we would sometimes like to do several things at once which however is impossible. We can do one thing only at the time, and these different motor ideas must come to an agreement. Frequently there originates a quarrel among the motor ideas and one—of course the strongest one—takes the lead and compels the others to keep quiet, at least at the time. The quarrel, commonly called deliberation, ended, we say, "*I* will do this." This "I" is the center of our mentality, it is what Mark Twain calls our master, but closely considered this terrible tyrant is only another name for the representative of our self.

Mark Twain has not investigated how this master of ours has originated, and we will here try to explain the character of this important piece of machinery in a few lines. The ego of man is ultimately nothing but a center of thought. It is the mere word "I" and this word represents the entire personality. It is like the apex of a pyramid. Every one calls himself "I," but every one is different, and this little word means all the motor ideas, all the thoughts, the sentiments, the mental and bodily faculties, the appetites, ideas, conceptions, aspirations, convictions, and ideals of the personality for which it stands.

Among the multitudes of our tendencies there is one group predominant. It is built up of structures forged by repeated experiences and fortified by education. It has been condensed out of innumerable observations and reflections, proclaiming the result in the shape of principles. This is what is commonly called conscience. Mark Twain does not distinguish between the "I" and the conscience, but we would say that they are by no means the same. If the conscience takes possession of the "I" and makes the "I" act according to its dictates, we may very well say that we do an act for duty's sake, but no human person can do it unless the "I" adopts the advice of its conscience, and it is natural that we appreciate actions done in this way. A man-machine in which the conscience has this power is deemed superior to one in which the behests of the stern tyrant are set aside.

Besides the conscience there are other tendencies which have a strong hold on the "I." Among them we will mention the hankering after pleasure, and the nature of our pleasures depends very much upon the constitution of a personality down to its deepest and most elementary roots in the lower structures of the sensual centers. There are men of all kinds of temper and inclination, developed under different conditions of life. There is the drunkard, there is the combative man who looks for a quarrel, there is the lover of gain who would enjoy taking advantage of his neighbor in business, there is the miser, and besides all the vicious kinds of men there are those of indifferent and also of noble tendencies.

The slightest disposition in our minds may be characterized as a piece of machinery which will assert its influence upon the whole in one way or another. The whole composition of the soul must be granted to be analogous to a machine, and we may even call its activity mechanical or machine-like. Every deliberation in the minds of man is a mechanical process, and we may very well speak of the dynamics of the mind. Educators and reformers ought to know this truth, and when it comes to practical work they act as if for education nothing was needed more than the insertion of machinery which will work for good.

The tendency to stimulate the human mind by wrong motives for accomplishing good ends is quite common, and it is this mainly which Mark Twain criticizes in our religious teachings. Mark Twain is quite right in saying that a pious Christian does not do an act of self-sacrifice for the sake of God or of Christ, or whatever his idea may be of the all-compelling divine authority which he obeys, but he follows his own master in him, and he must please him first. But what he really means to say, if we replace his mythological terminology by straight facts, is this, that before any person would live up to a certain ideal this ideal must be adopted as his own; it must gain his approval. A man must be able to say: "I will do this work of self-sacrifice," and Mark Twain's notion in attributing to the word "I" the rôle of a master who governs us had better be expressed in this way, that nothing, neither our vicious hankering after detrimental pleasure nor our nobler tendencies for doing good to our fellowmen or bringing any self-sacrifice, can be done by us until we ourselves decide upon the course of action we want to pursue. This means that every one in coming to a decision must be able to say: "I do this because this is my inmost desire," "this pleases me," "this I do because I adopt this motor idea as my own."

This cerebral structure which says "I" in us, this apex of our soul, the center of our personality, pronounces a decision, the result of a deliberation, and is an expression of our self. Accordingly this is not an act of slavish subjection, but it characterizes the nature of our inmost being.

The ego of man is, as it were, surrounded by its ministers who represent the different departments of his being. There are his animal instincts, there are his preferences. Every man has his own special tendencies and ideals; there are some who are anxious to collect treasures of art, others to accomplish certain deeds, others to acquire accomplishments, others to make a fortune, and there is no limit to the varieties of tendencies in different persons. The art of influencing one's fellows consists exactly in knowing the idiosyncracies wherewith they can be baited. A practical psychologist can play on these preferences as an organist may play on the organ. An instance of how different characters have to be handled may be found in the story of Reynard the Fox, who dupes the cat by a prospect of catching mice and the bear by his fondness for honey.

Mark Twain's philosophy is true as to facts but his attitude is wrong, and the source of his error lies in the mistaken mythology in which he dresses his psychological nomenclature. His dialogue continues:

NO PERSONAL MERIT.

O. M. I am sorry, but you see, yourself, that your mind is merely a machine, nothing more. You have no command over it, it has no command over itself—it is worked solely from the outside. That is the law of its make; it is the law of all machines.

Y. M. Can't I ever change one of these automatic opinions?

O. M. No. You can't yourself, but exterior influences can do it.

Y. M. And exterior ones only?

O. M. Yes—exterior ones only.

Y. M. That position is untenable—I may say ludicrously untenable.

O. M. What makes you think so?

Y. M. I don't merely think it, I know it. Suppose I resolve to enter upon a course of thought, and study, and reading, with the deliberate purpose of changing that opinion; and suppose I succeed. That is not the work of an exterior impulse, the whole of it is mine *in persona*; for I originated the project.

O. M. Not a shred of it. It grew out of this talk with me. But for that it would never have occurred to you. No man ever originates anything. All his thoughts, all his impulses, come from the outside.

Y. M. It's an exasperating subject. The first man had original thoughts, anyway; there was nobody to draw from.

O. M. It is a mistake. Adam's thoughts came to him from the outside. You have a fear of death. You did not invent that—you got it from outside, from talk and teaching. Adam had no fear of death—none in the world.

Y. M. Yes he had.

O. M. When he was created?

Y. M. No.

O. M. When, then?

Y. M. When he was threatened with it.

O. M. Then it came from the outside. Adam is quite big enough; let us not try to make a god of him. None but gods have ever had a thought which did not come from the outside. Adam probably had a good head, but it was of no sort of use to him until it was filled up from the outside. He was not able to invent the triflingest little thing with it. He had not a shadow of a notion of the difference between good and evil—he had got the idea from the outside.

To this rule that man is a machine and that the grist which the will of his mind works out comes from the outside, even a genius is no exception.

O. M. Shakespeare created nothing. He correctly observed, and he marvelously painted. He exactly portrayed

people whom God had created; but he created none himself. Let us spare him the slander of charging him with trying. Shakespeare could not create. He was a machine, and machines do not create.

Mark Twain claims that there is no personal merit. We are what we are because God, or whatever you will call outside influences, made us so.

O. M. Personal merit? No. A brave man does not create his bravery. He is entitled to no personal credit for possessing it. It is born to him. A baby born with a billion dollars—where is the personal merit in that? A baby born with nothing—where is the personal demerit in that? The one is fawned upon, admired, worshiped, by sycophants; the other is neglected and despised—where is the sense in it?

Y. M. Sometimes a timid man sets himself the task of conquering his cowardice and becoming brave—and succeeds. What do you say to that?

O. M. That it shows the value of training in right directions over training in wrong ones. Estimably valuable is training, influence, education, in right directions—training one's self-approbation to elevate its ideals. . . . In the world's view he is a worthier man than he was before, but he didn't achieve the change—the merit of it is not his.

The Old Man explains that "David was brave and fought Goliath. A coward would not have done it. David could not help being brave." This shocks the Young Man who exclaims, "Hang it, where is the sense in his becoming brave if he is to get no credit for it?" and the Old Man answers, "The sole impulse that ever moves a person to do a thing" is "the necessity of contenting his own spirit and winning its approval." This subject is discussed in a special chapter, and this idea forms the key to Mark Twain's psychology. He says:

GOVERNING MOTIVE ALWAYS SELF-APPROVAL.

Yes, this is the law, keep it in your mind. From his cradle to his grave a man never does a single thing which has any *first and foremost* object but one, to secure peace of mind, spiritual comfort, for *himself*.

As an instance he cites the duel of Alexander Hamilton. He says:

O. M. Alexander Hamilton was a conspicuously high-principled man. He regarded duelling as wrong, and as opposed to the teachings of religion—but in deference to public opinion he fought a duel. He deeply loved his family, but to buy public approval he treacherously deserted them and threw his life away, ungenerously leaving them to life-long sorrow in order that he might stand well with a foolish world. In the then condition of the public standards of honor he could not have been comfortable with the stigma upon him of having refused to fight. The teachings of religion, his devotion to his family, his kindness of heart, his high principles, all went for nothing when they stood in the way of his spiritual comfort. A man will do anything, no matter what it is, to secure his spiritual comfort; and he can neither be forced nor persuaded to any act which has not that goal for its object. Hamilton's act was compelled by the inborn necessity of contenting his own spirit; in this it was like all the other acts of life, and like all the acts of all men's lives. Do you see where the kernel of the matter lies? A man cannot be comfortable without his own approval. He will secure the largest share possible of that, at all costs, all sacrifices.

Y. M. A minute ago you said Hamilton fought that duel to get public approval.

O. M. I did. By refusing to fight the duel he would have secured his family's approval and a large share of

his own; but the public approval was more valuable in his eyes than all other approvals put together—in the earth or above it; to secure that would furnish him the most comfort of mind, the most self-approval; so he sacrificed all other values to get it.

Y. M. Some noble souls have refused to fight duels, and have manfully braved the public contempt.

O. M. They acted according to their make. They valued their principles and the approval of their families above the public approval. They took the thing they valued most and let the rest go. They took what would give them the largest share of personal contentment and approval—a man always does. Public opinion cannot force that kind of men to go to the wars. When they go it is for other reasons. Other spirit-contenting reasons.

The motives which are generally given are, according to the Old Man, wrong names. The Young Man asks for the meaning of love, hate, charity, revenge, humanity, magnanimity, forgiveness, but he is put down by the Old Man who says:

Different results of the one Master Impulse: the necessity of securing one's self-approval. They wear diverse clothes and are subject to diverse moods, but in whatsoever ways they masquerade they are the same person all the time. To change the figure, the compulsion that moves a man—and there is but one—is the necessity of securing the contentment of his own spirit. When it stops, the man is dead.

Y. M. That is foolishness. Love—

O. M. Why, love is that impulse, that law, in its most uncompromising form. It will squander life and everything else on its object. Not primarily for the object's sake, but for its own. When its object is happy it is happy—and that is what it is unconsciously after.

Y. M. You do not even except the lofty and gracious passion of mother-love?

O. M. No, it is the absolute slave of that law. The mother will go naked to clothe her child; she will starve that it may have food; suffer torture to save it from pain; die that it may live. She takes a living pleasure in making these sacrifices. She does it for that reward—that self-approval, that contentment, that peace, that comfort. She would do it for your child *if she could get the same pay.*

Y. M. This is an infernal philosophy of yours.

O. M. It isn't a philosophy, it is a fact.

No other motives count. That impulse in us is our master and there is no virtue, no self-sacrifice. The Old Man says:

Men pretend to self-sacrifices, but this is a thing which in the ordinary value of the phrase, does not exist and has not existed. A man often honestly thinks he is sacrificing himself merely and solely for some one else, but he is deceived; his bottom impulse is to content a requirement of his nature and training, and thus acquire peace for his soul.

THE NATURE AND TRAINING OF CONSCIENCE.

Y. M. Apparently, then, all men, both good and bad ones, devote their lives to contenting their consciences?

O. M. Yes. That is a good enough name for it: Conscience—that independent Sovereign, that insolent absolute Monarch inside of a man who is man's Master. There are all kinds of consciences, because there are all kinds of men. You satisfy an assassin's conscience in one way, a philanthropist's in another, a miser's in another, a burglar's in still another. As a guide or incentive to any authoritatively prescribed line of morals or conduct, (leaving training out of the account,) a man's conscience is totally valueless. I knew a kind-hearted Kentuckian whose self-approval was lacking—whose conscience was troubling him, to phrase it with exactness—because he had neglected to kill a certain man—a man whom he had never seen. The

stranger had killed this man's friend in a fight, this man's Kentucky training made it a duty to kill the stranger for it. He neglected his duty—kept dodging it, shirking it, putting it off, and his unrelenting conscience kept persecuting him for his conduct. At last, to get ease of mind, comfort, self-approval, he hunted up the stranger and took his life. It was an immense act of self-sacrifice (as per the usual definition) for he did not want to do it, and he never would have done it if he could have bought a contented spirit and an unworried mind at smaller cost. But we are so made that we will pay anything for that contentment—even another man's life.

Our master is our conscience, but the Old Man concedes at least that conscience can be trained to shun evil and prefer good, but under all circumstances the voice of the conscience is admitted "for spirit-contenting reasons only." Concerning conscience Mark Twain inserts a little story. He says:

O. M. I will tell you a little story:

Once upon a time an Infidel was guest in the house of a Christian widow whose little boy was ill and near to death. The Infidel often watched by the bedside and entertained the boy with talk, and he used these opportunities to satisfy a strong longing of his nature—that desire which is in us all to better other people's condition by having them think as we think. He was successful. But the dying boy, in his last moments, reproached him and said:

"I believed, and was happy in it; you have taken my belief away, and my comfort. Now I have nothing left, and I die miserable; for the things which you have told me do not take the place of that which I have lost."

And the mother also reproached the Infidel, and said:

"My child is forever lost, and my heart is broken. How could you do this cruel thing? We have done you no harm but only kindness; we made our house your home, you were welcome to all we had, and this is our reward."

The heart of the Infidel was filled with remorse for what he had done, and he said:

"It was wrong—I see it now; but I was only trying to do him good. In my view he was in error; it seemed my duty to teach him the truth."

Then the mother said:

"I had taught him, all his little life, what I believed to be the truth, and in his believing faith both of us were happy. Now he is dead—and lost; and I am miserable Our faith came down to us through centuries of believing ancestors; what right had you, or any one, to disturb it? Where was your honor, where was your shame?

Y. M. He was a miscreant, and deserved death!

O. M. He thought so himself, and said so.

Y. M. Ah—you see, his conscience was awakened!

O. M. Yes—his self-disapproval was. It pained him to see the mother suffer. He was sorry he had done a thing which brought him pain. It did not occur to him to think of the mother when he was mis-teaching the boy, for he was absorbed in providing pleasure for himself, then. Providing it by satisfying what he believed to be a call of duty.

Y. M. Call it what you please, it is a case of awakened conscience. That awakened conscience could never get itself into that species of trouble again. A cure like that is a permanent cure.

O. M. Pardon—I had not finished the story. We are creatures of outside influences — we originate nothing within. Whenever we take a new line of thought and drift into a new line of belief and action, the impulse is always suggested from the outside. Remorse so preyed upon the Infidel that it dissolved his harshness toward the boy's religion and made him come to regard it with tolerance, next with kindness, for the boy's sake and the mother's. Finally he found himself examining it. From that

moment his progress in his new trend was steady and rapid. He became a believing Christian. And now his remorse for having robbed the dying boy of his faith and his salvation was bitterer than ever. It gave him no rest, no peace. He must have rest and peace—it is the law of our nature. There seemed but one way to get it; he must devote himself to saving imperiled souls. He became a missionary. He landed in a pagan country ill and helpless. A native widow took him into her humble home and nursed him back to convalescence. Then her young boy was taken hopelessly ill, and the grateful missionary helped her tend him. Here was his first opportunity to repair a part of the wrong done to the other boy by doing a precious service for this one by undermining his foolish faith in his false gods. He was successful. But the dying boy in his last moments reproached him and said:

"I believed, and was happy in it; you have taken my belief away, and my comfort. Now I have nothing left and I die miserable; for the things which you have told me do not take the place of that which I have lost."

And the mother, also, reproached the missionary, and said:

"My child is forever lost, and my heart is broken. How could you do this cruel thing? We had done you no harm, but only kindness; we made our house your home, you were welcome to all we had, and this is our reward."

The heart of the missionary was filled with remorse for what he had done, and he said:

"It was wrong—I see it now; but I was trying to do him good. In my view he was in error; it seemed my duty to teach him the truth."

Then the mother said:

"I had taught him, all his little life, what I believed to be the truth, and in his believing faith both of us were happy. Now he is dead—and lost; and I am miserable.

Our faith came down to us through centuries of believing ancestors; what right had you, or any one, to disturb it? Where was your honor, where was your shame?"

The missionary's anguish of remorse and sense of treachery were as bitter and persecuting and unappeasable, now, as they had been in the former case. The story is finished. What is your comment?

Y. M. The man's conscience was a fool! It was morbid. It didn't know right from wrong.

O. M. I am not sorry to hear you say that. If you grant that one man's conscience doesn't know right from wrong, it is an admission that there are others like it. This single admission pulls down the whole doctrine of infallibility in consciences. Meantime there is one thing which I ask you to notice.

Y. M. What is that?

O. M. That in both cases the man's act gave him no spiritual discomfort, and that he was quite satisfied with it and got pleasure out of it. But afterward when it resulted in pain to him he was sorry. Sorry it had inflicted pain upon the others, but for no reason under the sun except that their pain gave *him* pain. Our consciences take no notice of pain inflicted upon others until it reaches a point where it gives pain to us. In all cases without exception we are absolutely indifferent to another person's pain until his sufferings make us uncomfortable. Many an infidel would not have been troubled by that Christian mother's distress. Don't you believe that?

Y. M. Yes. You might almost say it of the average infidel, I think.

O. M. And many a missionary, sternly fortified by his sense of duty, would not have been troubled by the pagan mother's distress—Jesuit missionaries in Canada in the early French times, for instance; see episodes quoted by Parkman.....

We have smuggled a word into the dictionary which ought not to be there at all—self-sacrifice. It describes a thing which does not exist. But worst of all, we ignore and never mention the sole impulse which dictates and compels a man's every act: the imperious necessity of securing his own approval, in every emergency, and at all costs. To it we owe all that we are.

DUTY FOR DUTY'S SAKE.

This master in us is the best a man has and to him we owe our moral progress. This doctrine Mark Twain calls the "gospel of self-approval." He illustrates it by summing up the contents of a novel in which a pious man abandons his lucrative lumber business and devotes himself to missionary work. He neglect all his duties in life, makes all those dependent on him miserable, and the apparent motive is not to serve the cause of Christ, but his vanity in being praised and flattered by a circle of pious Christians. When he fails to get his pay he is disappointed. The conclusion is that there is no self-sacrifice for others in the common meaning of the phrase, for "men make daily sacrifices for others, but it is for their own sake first." The same is true of duty:

O. M. No man performs a duty for mere duty's sake; the act must content his spirit first. He must feel better for doing the duty than he would for shirking it. Otherwise he will not do it.

Y. M. Take the case of the Berkeley Castle.

O. M. It was a noble duty, greatly performed. Take it to pieces and examine it, if you like.

Y. M. A British troop-ship crowded with soldiers and their wives and children. She struck a rock and began to sink. There was room in the boats for the women and children only. The colonel lined up his regiment on the deck and said, "It is our duty to die, that they may be saved." There was no murmur, no protest. The boats carried away the women and children. When the death-moment was come, the colonel and his officers took their

several posts, the men stood at shoulder-arms, and so, as on dress-parade, with their flag flying and the drums beating, they went down, a sacrifice to duty for duty's sake. Can you view it as other than that?

O. M. It was something as fine as that, as exalted as that. Could you have remained in those ranks and gone down to your death in that unflinching way?

Y. M. Could I? No, I could not.

O. M. Think. Imagine yourself there, with that watery doom creeping higher and higher around you.

Y. M. I can imagine it. I feel all the horror of it. I could not have endured it, I could not have remained in my place. I know it.

O. M. Why?

Y. M. There is no why about it: I know myself, and I know I couldn't do it.

O. M. But it would be your duty to do it.

Y. M. Yes, I know—but I couldn't.

O. M. It was more than a thousand men, yet not one of them flinched. Some of them must have been born with your temperament; if they could do that great duty for duty's sake, why not you? Don't you know that you could go out and gather together a thousand clerks and mechanics and put them on that deck and ask them to die for duty's sake, and not two dozen of them would stay in the ranks to the end?

Y. M. Yes, I know that.

O. M. But you train them, and put them through a campaign or two; then they would be soldiers; soldiers, with a soldier's pride, a soldier's self-respect, a soldier's ideals. They would have to content a soldier's spirit then, not a clerk's, not a mechanic's. They could not content that spirit by shirking a soldier's duty, could they?

Y. M. I suppose not.

O. M. Then they would do the duty not for the duty's

sake, but for their own sake—primarily. The duty was just the same, and just as imperative, when they were clerks, mechanics, raw recruits, but they wouldn't perform it for that. As clerks and mechanics they had other ideals, another spirit to satisfy, and they satisfied it. They had to; it is the law. Training is potent. Training toward higher and higher, and ever higher ideals is worth any man's thought and labor and diligence.

THE SEARCH FOR TRUTH.

The two important things are training and the inherited disposition of our character.

It is true there are seekers after truth, but Mark Twain contends that seeking after truth is only temporary. No one will permanently seek after truth. The Old Man says:

We are always hearing of people who are around seeking after truth. I have never seen a (permanent) specimen. I think he has never lived. But I have seen several entirely sincere people who thought they were (permanent) seekers after truth. They sought diligently, persistently, carefully, cautiously, profoundly, with perfect honesty and nicely adjusted judgment—until they believed that without doubt or question they had found the truth. That was the end of the search. The man spent the rest of his life hunting up shingles wherewith to protect his truth from the weather. If he was seeking after political truth he found it in one or another of the hundred political gospels which govern men in the earth; if he was seeking after the only true religion he found it in one or another of the three thousand that are on the market. In any case, when he found the truth he sought no further; but from that day forth, with his soldering iron in one hand and his bludgeon in the other he tinkered its leaks and reasoned with objectors. There have been innumerable temporary seekers after truth—have you ever heard of a permanent

one? In the very nature of man such a person is impossible.

This statement is repeated near the end of the discussion where Mark Twain confesses that he has ceased to be a seeker after truth, near the end of the story where he says:

I told you that there are none but temporary truth-seekers; that a permanent one is a human impossibility; that as soon as the seeker finds what he is thoroughly convinced is the truth, he seeks no further, but gives the rest of his days to hunting junk to patch it and caulk it and prop it with, and make it weather-proof and keep it from caving in on him. Hence the Presbyterian remains a Presbyterian, the Spiritualist a Spiritualist, the Democrat a Democrat, the Republican a Republican, the Monarchist a Monarchist; and if a humble, earnest and sincere seeker after truth should find it in the proposition that the moon is made of green cheese, nothing could ever budge him from that position; for he is nothing but an automatic machine, and must obey the laws of his construction. And so having found the truth, perceiving that beyond question man has but one moving impulse—the contenting of his own spirit—and is merely a machine and entitled to no personal merit for any thing he does, it is not humanly possible for me to seek further. The rest of my days will be spent in patching and painting and puttying and caulking my priceless possession and in looking the other way when an imploring argument or a damaging fact approaches.

THE VALUE OF TRAINING.

Concerning training we listen to the following conversation:

Y. M. Now then, I will ask you where there is any sense in training people to lead virtuous lives. What is gained by it?

O. M. The man himself gets large advantages out of

it, and that is the main thing—to him. He is not a peril to his neighbors, he is not a damage to them—and so they get an advantage out of his virtues. That is the main thing to them. It can make this life comparatively comfortable to the parties concerned; the neglect of this training can make this life a constant peril and distress to the parties concerned.

Y. M. You have said that training is everything; that training is the man himself, for it makes him what he is.

O. M. I said training and another thing. . . . That other thing is temperament—that is, the disposition you were born with. You can't eradicate your disposition nor any rag of it—you can only put a pressure on it and keep it down and quiet. You have a warm temper?

Y. M. Yes.

O. M. You will never get rid of it; but by watching it you can keep it down nearly all the time. Its presence is your limit. Your reform will never quite reach perfection, for your temper will beat you now and then, but you will come near enough. You have made valuable progress and can make more. There is use in training. Immense use. . . . . Diligently train your ideals upward and still upward toward the summit where you will find your chiefest pleasure in conduct which, while contenting you, will be sure to confer benefits upon your neighbor and the community.

Y. M. Is that a new gospel?

O. M. No.

Y. M. It has been taught before?

O. M. For ten thousand years.

Y. M. By whom?

O. M. All the great religions—all the great gospels.

Y. M. Then there is nothing new about it?

O. M. Oh, yes, there is. It is candidly stated, this time. That has not been done before.

Y. M. How do you mean?

O. M. Haven't I put you *first,* and your neighbor and the community afterward?

Y. M. Well, yes, that is a difference, it is true.

O. M. The difference between straight speaking and crooked; the difference between frankness and shuffling.

Y. M. Explain.

O. M. The others offer you a hundred bribes to be good, thus conceding that the Master inside of you must be conciliated and contented first, and that you will do nothing at first-hand but for his sake; then they turn square around and require you to do good for others' sake chiefly; and to do your duty for duty's sake, chiefly; and to do acts of self-sacrifice. Thus at the outset we all stand upon the same ground—recognition of the supreme and absolute Monarch that resides in man, and we all grovel before him and appeal to him; then those others dodge and shuffle, and face around and unfrankly and inconsistently and illogically change the form of their appeal and direct its persuasions to man's second-place powers and to powers which have no existence in him, thus advancing them to first place; whereas in my admonition I stick logically and consistently to the original position: I place the Interior Master's requirements first, and keep them there.

While training is helpful Mark Twain believes that man's dignity and the merit he acquires by being trained must be surrendered. The discussion continues on this subject as follows:

Y. M. Then you believe that such tendency toward doing good as is in men's hearts would not be diminished by the removal of the delusion that good deeds are done primarily for the sake of No. 2 instead of for the sake of No. 1?

O. M. That is what I fully believe.

Y. M. Doesn't it somehow seem to take from the dignity of the deed?

O. M. If there is dignity in falsity, it does. It removes that.

Y. M. What is left for the moralist to do?

O. M. Teach unreservedly what he already teaches with one side of his mouth and takes back with the other: Do right for your own sake, and be happy in knowing that your neighbor will certainly share in the benefits resulting.

Man has no more merit than the materials which we handle. For instance:

THE FIGURE OF THE GOLD INGOTS.

Here are two ingots of virgin gold. They shall represent a couple of characters which have been refined and perfected in the virtues by years of diligent right training. Suppose you wanted to break down these strong and well compacted characters—what influence would you bring to bear upon the ingots?....

Y. M. A steam-jet cannot break down such a substance.....

O. M. The quicksilver is an outside influence which gold (by its peculiar nature—say temperament, disposition), cannot be indifferent to. It stirs the interest of the gold, although we do not perceive it; but a single application of the influence works no damage. Let us continue the application in a steady stream, and call each minute a year. By the end of ten or twenty minutes—ten or twenty years—the little ingot is sodden with quicksilver, its virtues are gone, its character is degraded. At last it is ready to yield to a temptation which it would have taken no notice of, ten or twenty years ago. We will apply that temptation in the form of a pressure of my finger. You note the result?

Y. M. Yes; the ingot has crumbled to sand.

The instance of two ingots of gold is further explained by a

story of two brothers, which is probably taken from some newspaper account. The Old Man says:

There was once a pair of New England boys—twins. They were alike in good dispositions, fleckless morals, and personal appearance. They were the models of the Sunday-school. At fifteen George had an opportunity to go as cabin-boy in a whale-ship, and sailed away for the Pacific. Henry remained at home in the village. At eighteen George was a sailor before the mast, and Henry was teacher of the advanced Bible class. At twenty-two George, through fighting-habits and drinking-habits acquired at sea and in the sailor boarding-houses of the European and Oriental ports, was a common rough in Hong Kong, and out of a job; and Henry was superintendent of the Sunday-school. At twenty-six George was a wanderer, a tramp, and Henry was pastor of the village church. Then George came home, and was Henry's guest. One evening a man passed by and turned down the lane, and Henry said, with a pathetic smile, "Without intending me a discomfort, that man is always keeping me reminded of my pinching poverty, for he carries heaps of money about him, and goes by here every evening of his life." That outside influence—that remark—was enough for George, but it was not the one that made him ambush the man and rob him, it merely represented the eleven years' accumulation of such influences, and gave birth to the act for which their long gestation had made preparation. It had never entered the head of Henry to rob the man—his ingot had been subjected to clean steam only; but George's had been subjected to vaporized quicksilver.

THE MIND AN INDEPENDENT MACHINE.

A peculiar theory of Mark Twain is his idea that the mind is a machinery which is independent of man, as if there were no connection between what he calls the stern master or the impulse and the mentality of man. The mind works whether the master wants

it or not. The Young Man asks whether man's mind works automatically and is really independent of control. The Old Man says:

It is diligently at work, unceasingly at work, during every waking moment. Have you never tossed about all night, imploring, beseeching, commanding your mind to stop work and let you go to sleep?—you who perhaps imagine that your mind is your servant and must obey your orders, think what you tell it to think, and stop when you tell it to stop. When it chooses to work, there is no way to keep it still for an instant. The brightest man would not be able to supply it with subjects if he had to hunt them up. If it needed the man's help it would wait for him to give it work when he wakes in the morning. . . . The mind is independent of the man. He has no control over it, it does as it pleases. It will take up a subject in spite of him; it will stick to it in spite of him; it will throw it aside in spite of him. It is entirely independent of him. . . . Yes, asleep as well as awake. The mind is quite independent. It is master. You have nothing to do with it. It is so apart from you that it can conduct its affairs, sing its songs, play its chess, weave its complex and ingeniously-constructed dreams, while you sleep or wake. You have imagined that you could originate a thought in your mind, and you have sincerely believed you could do it.

Mark Twain reminds us of the well-known truth that sometimes we can not rid ourselves of jingles of melodies that haunt us, and claims that mind is just as independent in dreams as when awake. He compares the dream to a drama. He says:

Your dreaming mind originates the scheme, consistently and artistically develops it, and carries the little drama creditably through—all without help or suggestion from you.

Though the mind is independent man has the power to set it to work on the subject which pleases the mind. We read:

O. M. A man's mind, left free, has no use for his help. But there is one way whereby he can get its help when he desires it.

Y. M. What is that way?

O. M. When your mind is racing along from subject to subject and strikes an inspiring one, open your mouth and begin talking upon that matter—or take your pen and use that. It will interest your mind and concentrate it, and it will pursue the subject with satisfaction. It will take full charge, and furnish the words itself. . . . Take a "flash of wit"—repartee. Flash is the right word. It is out instantly. There is no time to arrange the words. There is no thinking, no reflecting. Where there is a wit-mechanism it is automatic in its action, and needs no help. Where the wit-mechanism is lacking, no amount of study and reflection can manufacture the product.

Y. M. You really think a man originates nothing, creates nothing?

O. M. I do. Men perceive, and their brain-machines automatically combine the things perceived. That is all.

Y. M. The steam engine?

O. M. It takes fifty men a hundred years to invent it. One meaning of invent is discover. I use the word in that sense. Little by little they discover and apply the multitude of details that go to make the perfect engine. Watt noticed that confined steam was strong enough to lift the lid of the tea-pot. He didn't create the idea, he merely discovered the fact; the cat had noticed it a hundred times. From the tea-pot he evolved the piston-rod. To attach something to the piston-rod to be moved by it, was a simple matter—crank and wheel. And so there was a working engine.

One by one, improvements were discovered by men who used their eyes, not their creating powers—for they hadn't any—and now, after a hundred years, the patient contri-

butions of fifty or a hundred observers stand compacted in the wonderful machine which drives the ocean liner.

THE ANIMAL MIND AND INSTINCT.

The animal mind is not different from the mind of man, only man's mind is more complicated but by no means superior. Shakespeare writes a drama borrowing from preceding ages. He puts this and that together. That is all he does and can do, but so does the rat. Concerning the rat Mark Twain says:

He observes a smell, he infers a cheese, he seeks and finds. The astronomer observes this and that; adds his this and that to the this-and-thats of a hundred predecessors, infers an invisible planet, seeks it and finds it. The rat gets into a trap; gets out with trouble; infers that cheese in traps lacks value, and meddles with that trap no more. The astronomer is very proud of his achievement, the rat is proud of his. Yet both are machines, they have done machine work, they have originated nothing, they have no right to be vain, the whole credit belongs to their Maker. They are entitled to no honors, no praises, no monuments when they die, no remembrance. One is a complex and elaborate machine, the other a simple and limited machine, but they are alike in principle, function and process, and neither of them works otherwise than automatically, and neither of them may righteously claim a personal superiority or a personal dginity above the other....

Y. M. It is odious. Those drunken theories of yours —concerning the rat and all that—strip man bare of all his dignities, grandeurs, sublimities.

O. M. He hasn't any to strip—they are shams, stolen clothes. He claims credits which belong solely to his Maker....I think that the rat's mind and the man's mind are the same machine, but of unequal capacities—like yours and Edison's; like the African pigmy's and Homer's; like the Bushman's and Bismarck's.

Y. M. How are you going to make that out, when the lower animals have no mental quality but instinct, while man possesses reason?

O. M. What is instinct?

Y. M. It is merely unthinking and mechanical exercise of inherited habit?

The term instinct is meaningless. The Old Man says:

Now my idea of the meaningless term "instinct" is, that it is merely petrified thought; solidified and made inanimate by habit; thought which was once alive and awake, but is become unconscious—walks in its sleep so to speak.

For a further explanation of the thinking ability of animals the Old Man presents two instances concerning gulls supposed to belong to the most stupid animals.

Here is the experience of a gull, as related by a naturalist. The scene is a Scotch fishing village where the gulls were kindly treated. This particular gull visited a cottage; was fed; came next day and was fed again; came into the house, next time, and ate with the family; kept on doing this almost daily thereafter. But, once the gull was away on a journey for a few days, and when it returned the house was vacant. Its friends had removed to a village three miles distant. Several months later it saw the head of the family on the street there, followed him home, entered the house without excuse or apology, and became a daily guest again. Gulls do not rank high, mentally, but this one had memory and reasoning faculty.

Here is a case of a bird and a stranger as related by a naturalist. An Englishman saw a bird flying around about his dog's head, down in the grounds, and uttering cries of distress. He went there to see about it. The dog had a young bird in his mouth—unhurt. The gentleman rescued it and put it on a bush and brought the dog away. Early the next morning the mother-bird came for the

gentleman, who was sitting on his verandah, and by its maneuvers persuaded him to follow it to a distant part of the grounds—flying a little way in front of him and waiting for him to catch up, and so on; and keeping to the winding path, too, instead of flying the near way across lots. The same dog was the culprit; he had the young bird again, and once more he had to give it up. Since the stranger had helped her once, she inferred that he would do it again; she knew where to find him, and she went upon her errand with confidence. Her mental processes were what Edison's would have been. She put this and that together—and that is all that thought is—and out of them built her logical arrangement of inferences. Edison could not have done it any better himself.

Y. M. Do you think that many of the dumb animals can think?

O. M. Yes—the elephant, the monkey, the horse, the dog, the parrot, the macaw, the mocking-bird, and many others. The elephant whose mate fell into a pit, and who dumped dirt and rubbish into the pit till the bottom was raised high enough to enable the captive to step out, was equipped with the reasoning quality. Dogs and elephants learn all sorts of wonderful things. They must surely be able to notice, and to put things together, and say to themselves, "I get the idea, now: when I do so and so, as per order, I am praised and fed; when I do differently I am punished." Fleas can be taught nearly anything that a congressman can.....As a thinker and planner the ant is the equal of any savage race of men; as a self-educated specialist in several arts she is the superior of any savage race of men; and in one or two high mental qualities she is above the reach of any man, savage or civilized.

Y. M. Oh, come! you are abolishing the intellectual frontier which separated man and beast.

O. M. I beg your pardon. One cannot abolish what does not exist.

Y. M. You are not in earnest, I hope. You cannot seriously mean to say there is no frontier.

O. M. I do say it seriously.

The Young Man objects that animals are dumb, but the Old Man flatly denies it. He says:

"Dumb" beast suggests an animal that has no thought-machinery, no understanding, no speech, no way of communicating what is in its mind. We know that a hen has speech. We cannot understand everything she says, but we easily learn two or three of her phrases. We know when she is saying, "I have laid an egg"; we know when she is saying to the chicks, "Run here, dears, I've found a worm"; we know what she is saying when she voices a warning, "Quick! hurry! gather yourselves under mamma, there's a hawk coming!" We understand the cat when she stretches herself out, purring with affection and contentment and lifts up a soft voice and says, "Come, kitties, supper's ready"; we understand her when she goes mourning about and says, "Where can they be?—they are lost—won't you help me hunt for them?" and we understand the disreputable Tom when he challenges at midnight from his shed, "You come over here, you product of immoral commerce, and I'll make your fur fly!" We understand a few of the dog's phrases, and we learn to understand a few of the remarks and gestures of any bird or other animal that we domesticate and observe. The clearness and exactness of a few of the hen's speeches which we understand is argument that she can communicate to her kind a hundred things which we cannot comprehend—in a word, that she can converse. And this argument is also applicable in the Unrevealed. It is just like man's vanity and impertinence to call an animal dumb because it is dumb to his dull perceptions.....

In all his history the aboriginal Australian never thought out a house for himself and built it. The ant is an amazing architect. She is a wee little creature, but she builds a strong and enduring house eight feet high—a house which is as large in proportion to her size as is the largest capitol or cathedral in the world compared to man's size. No savage race has produced architects who could approach the ant in genius or culture. No civilized race has produced architects who could plan a house better for the uses proposed than can hers. Her house contains a throne-room; nurseries for her young; granaries, apartments for her soldiers, her workers, etc.; and they and the multifarious halls and corridors which communicate with them are arranged and distributed with an educated and experienced eye for convenience and adaptability. But let us look further before we decide. The ant has soldiers—battalions, regiments, armies; and they have their appointed captains and generals, who lead them to battle.

Y. M. That could be instinct, too.

O. M. We will look still further. The ant has a system of government; it is well planned, elaborate, and is well carried on.

Y. M. Instinct again.

O. M. She has crowds of slaves, and is a hard and unjust employer of forced labor.

Y. M. Instinct.

O. M. She has cows, and milks them.

Y. M. Instinct, of course.

O. M. In Texas she lays out a farm twelve feet square, plants it, weeds it, gathers the crop and stores it away.

Y. M. Instinct, all the same.

O. M. The ant discriminates between friend and stranger. Sir John Lubbock took ants from two different nests, made them drunk with whisky and laid them, unconscious, by one of the nests, near some water. Ants from the nest

came and examined and discussed these disgraced creatures, then carried their friends home and threw the strangers overboard. Sir John repeated the experiment a number of times. For a time the sober ants did as they had done at first—carried their friends home and threw the strangers overboard. But finally they lost patience, seeing that their reformatory efforts went for nothing, and threw both friends and strangers overboard. Come—is this instinct, or is it thoughtful and intelligent discussion of a thing new—absolutely new—to their experience; with a verdict arrived at, sentence passed, and judgment executed? Is it instinct?—thought petrified by ages of habit—or isn't it brand-new thought, inspired by the new occasion, the new circumstances?

I will give you another instance of thought. Franklin had a cup of sugar on a table in his room. The ants got at it. He tried several preventives; the ants rose superior to them. Finally he contrived one which shut off access—probably set the table's legs in pans of water, or drew a circle of tar around the cup, I don't remember. At any rate he watched to see what they would do. They tried various schemes—failures, every one. The ants were puzzled. Finally they held a consultation, discussed the problem, arrived at a decision—and this time they beat that great philosopher. The formed in procession, crossed the floor, climbed the wall, marched across the ceiling to a point just over the cup, then one by one they let go and fell down into it! Was that instinct—thought petrified by ages of inherited habit?

Y. M. No, I don't believe it was. I believe it was a newly-reasoned scheme to meet a new emergency.

O. M. Very well. You have conceded the reasoning power in two instances. I come now to a mental detail wherein the ant is a long way the superior of any human being. Sir John Lubbock proved by many experiments

that an ant knows a stranger-ant of her own species in a moment, even when the stranger is disguised—with paint. Also he proved that an ant knows every individual in her hive of 500,000 souls. Also, after a year's absence of one of the 500,000 she will straightway recognize the returned absentee and grace the recognition with an affectionate welcome. How are these recognitions made? Not by color, for painted ants were recognized. Not by smell, for ants that had been dipped in chloroform were recognized. Not by speech and not by antennae-signs nor contacts, for the drunken and motionless ants were recognized and the friend discriminated from the stranger. The ants were all of the same species, therefore the friends had to be recognized by form and feature—friends who formed part of a hive of 500,000! Has any man a memory for form and feature approaching that?

Y. M. Certainly not.

O. M. Franklin's ant and Lubbock's ants show fine capacities of putting this and that together in new and untried emergencies and deducting smart conclusions from the combinations—a man's mental process exactly. With memory to help, man preserves his observations and reasonings, reflects upon them, adds to them, re-combines, and so proceeds, stage by stage, to far results—from the tea-kettle to the ocean greyhound's complex engine; from personal laber to slave labor; from wigwam to palace; from the capricious chase to agriculture, and stored food; from nomadic life to stable government and concentrated authority; from incoherent hordes to massed armies. The ant has observation, the reasoning faculty, and the preserving adjunct of a prodigious memory; she has duplicated man's development and the essential features of his civilization, and you call it all instinct!

Y. M. We have come a good way. As a result—as I understand it—I am required to concede that there is abso-

lutely no intellectual frontier separating man and the unrevealed creatures?

O. M. That is what you are required to concede. There is no such frontier—there is no way to get around that. Man has a finer and more capable machine in him than those others, but it is the same machine and works in the same way. And neither he nor those others can command the machine—it is strictly automatic, independent of control, works when it pleases, and when it doesn't please, it can't be forced.

Y. M. Then man and the other animals are all alike, as to mental machinery, and there isn't any difference of any stupendous magnitude between them, except in quantity, not in kind.

O. M. That is about the state of it—intellectuality. There are pronounced limitations on both sides. We can't learn to understand much of their language, but the dog, the elephant, etc., learn to understand a very great deal of ours. To that extent they are our superiors. On the other hand they can't learn reading, writing, etc., nor any of our fine and high things, and there we have a large advantage over them.

Concerning the moral sense of animals the Young Man expects his old friend to make an exception in favor of man, but the Old Man prefers animals' morality to man's. He says: "I wasn't going to hoist man up to that." This is too much for the Young Man who claims that man at least has free will and a choice between different actions. He insists that while animals do their work according to their machine, man determines his decisions, and in doing so he exercises free will, but this choice Mark Twain claims is only allowed to the mind. Man's stern master would not allow free choice. Part of the discussion reads as follows:

O. M. The mind can freely select, choose, point out, the right and just one—its function stops there. It can go no further in the matter. It has no authority to say

that the right one shall be acted upon and the wrong one discarded. That authority is in other hands.

Y. M. The man's?

O. M. In the machine which stands for him. In his born disposition and the character which has been built around it by training and environment.

Y. M. It will act upon the right one of the two?

O. M. It will do as it pleases in the matter. George Washington's machine would act upon the right one; Pizarro's mind would know which was the right one and which the wrong, but the Master inside of Pizarro would act upon the wrong one.

Y. M. Then as I understand it a bad man's mental machinery calmly and judicially points out which of two things is right und just—

O. M. Yes, and his moral machinery will freely act upon the one or the other, according to its make. His temperament and training will decide what he shall do, and he will do it; he cannot help himself, he has no authority over the matter....

There is will. But it has nothing to do with intellectual perceptions of right and wrong, and is not under their command. David's temperament and training had will, and it was compulsory force; David had to obey its decrees, he had no choice. The coward's temperament and training possess will, and it is compulsory; it commands him to avoid danger, and he obeys, he has no choice. But neither the Davids nor the cowards possess free will—will that may do the right or do the wrong, as their mental verdict shall decide.

SPIRITUAL DECISIONS.

We note here that all decisions are spiritual. The Old Man corrects the Young Man as to his notion of materiality. He says:

There is no such thing as material covetousness. All

covetousness is spiritual. The Master in you requires that in all cases you shall content his spirit—that alone. He never requires anything else, he never interests himself in any other matter.

Y. M. Ah, come! When he covets somebody's money —isn't that rather distinctly material and gross?

O. M. No. The money is merely a symbol—it represents in visible and concrete form a spiritual desire. Any so-called material thing that you want is merely a symbol: you want it not for itself, but because it will content your spirit for the moment....There is that pathetic tale of the man who labored like a slave, unsatisfied, until he had accumulated a fortune, and was happy over it, jubilant about it; then in a single week a pestilence swept away all whom he held dear and left him desolate. His money's value was gone. He realized that his joy in it came not from the money itself, but from the spiritual contentment he got out of his family's enjoyment of the pleasures and delights it lavished upon them. Money has no material value; if you remove its spiritual value nothing is left but dross. It is so with all things, little or big, majestic or trivial—there are no exceptions. Crowns, scepters, pennies, paste jewels, village notoriety, world-wide fame—they are all the same, they have no material value: while they content the spirit they are precious, when this fails they are worthless.

TEMPERAMENT.

A peculiar notion of Mark Twain is his belief in the self-advertisement of all different nations, all agreeing in being possessed of a sanguine temperament. The main-spring in man's life is his temperament, his desire for happiness, not his intellectual reflections. Therefore there is no need of worrying about such a distressing doctrine as his philosophy that man is a machine. Mark Twain says:

A nation can be brought—by force of circumstances, not argument—to reconcile itself to any kind of govern-

ment or religion that can be devised; in time it will fit itself to the required conditions; later, it will prefer them and will fiercely fight for them. As instances, you have all history: the Greeks, the Romans, the Persians, the Egyptians, the Russians, the Germans, the French, the English, the Spaniards, the Americans, the South Americans, the Japanese, the Chinese, the Hindus, the Turks—a thousand wild and tame religions, every kind of government that can be thought of, from tiger to house-cat, each nation knowing it has the only true religion and the only sane system of government, each despising all the others, each an ass and not suspecting it, each proud of its fancied supremacy, each perfectly sure it is the pet of God, each with undoubting confidence summoning Him to take command in time of war, but by habit able to excuse it and resume compliments—in a word, the whole human race content, always content, persistently content, indestructibly content, happy, thankful, proud, no matter what its religion is, nor whether its master be tiger or house-cat. Am I stating facts? You know I am.

Mark Twain admits that there are different temperaments, and these temperaments are inborn. They can be modified but not changed. His views are illustrated in two friends of the Young Man, one of whom he calls Burgess, the other one Adams. He says concerning them:

Their life-histories are about alike—but look at the results! Their ages are about the same—around about fifty. Burgess has always been buoyant, hopeful, happy; Adams has always been cheerless, hopeless, despondent. As young fellows, both tried country journalism — and failed. Burgess didn't seem to mind it; Adams couldn't smile, he could only mourn and groan over what had happened, and torture himself with vain regrets for not having done so and so instead of so and so—then he would have succeeded. They tried the law—and failed. Burgess

remained happy—because he couldn't help it, Adams was wretched—because he couldn't help it. From that day to this, those two men have gone on trying things and failing: Burgess has come out happy and cheerful every time, Adams the reverse. And we do absolutely know that these men's inborn temperaments have remained unchanged through all the vicissitudes of their material affairs. Let us see how it is with their immaterialities. Both have been zealous democrats; both have been zealous republicans; both have been zealous mugwumps. Burgess has always found happiness and Adams unhappiness, in these several political beliefs and in their migrations out of them. Both of these men have been Presbyterians, Universalists, Methodists, Catholics—then Presbyterians again, then Methodists again. Burgess has always found rest in these excursions, and Adams unrest. They are trying Christian Science now, with the customary result, the inevitable result. No political or religious belief can make Burgess unhappy or the other man happy. I assure you it is purely a matter of temperament. Beliefs are acquirements, temperaments are born; beliefs are subject to change, nothing whatever can change temperament.

This is the reason why no pessimistic philosophy can ever become dangerous. Mark Twain himself might have become a pessimist through the recognition of this sorry truth, but his temperament would not allow it. The discussion on the subject reads:

Y. M. Look at the matter as it stands now. Man has been taught that he is the supreme marvel of the creation; he believes it; in all the ages he has never doubted it, whether he was a naked savage, or clothed in purple and fine linen, and civilized. This has made his heart buoyant, his life cheery. His pride in himself, his sincere admiration of himself, his joy in what he supposed were his own and unassisted achievements, and his exultation over the praise and applause which they evoked—these have exalted

him, enthused him, ambitioned him to higher and higher flights; in a word, made his life worth the living. But by your scheme, all this is abolished; he is degraded to a machine, he is a nobody, his noble prides wither to mere vanities; let him strive as he may, he can never be any better than his humblest and stupidest neighbor; he would never be cheerful again, his life would not be worth the living.

O. M. You really think that?

Y. M. I certainly do.

O. M. Have you ever seen me uncheerful, unhappy?

Y. M. No.

O. M. Well, I believe these things. Why have they not made me unhappy?

Y. M. Oh, well—temperament, of course! You never let that escape from your scheme.

O. M. That is correct. If a man is born with an unhappy temperament, nothing can make him happy; if he is born with a happy temperament, nothing can make him unhappy.

THE EGO.

In conclusion we represent Mark Twain's explanation of the stern master which governs us, which is the "I," our ego or the "me." The Old Man says:

You perceive that the question of who or what the Me is, is not a simple one at all. You say, "I admire the rainbow," and "I believe the world is round," and in these cases we find that the Me is not all speaking, but only the mental part. You say "I grieve," and again the Me is not all speaking, but only the moral part. You say the mind is wholly spiritual; then you say "I have a pain" and find that this time the Me is mental and spiritual combined. We all use the "I" in this indeterminate fashion, there is no help for it. We imagine a Master and King over what

you call The Whole Thing, and we speak of him as "I," but when we try to define him we find we cannot do it. The intellect and the feelings can act quite independently of each other; we recognize that, and we look around for a ruler who is master over both, and can serve as a definite and indisputable "I," and enable us to know what we mean and who or what we are talking about when we use that pronoun, but we have to give it up and confess that we cannot find him. To me, man is a machine, made up of many mechanisms; the moral and mental ones acting automatically in accordance with the impulses of an interior Master who is built out of born temperament and an accumulation of multitudinous outside influences and trainings; a machine whose one function is to secure the spiritual contentment of the Master, be his desires good or be they evil; a machine whose will is absolute and must be obeyed, and always is obeyed.

Y. M. Maybe the Me is the Soul?

O. M. Maybe it is. What is the Soul?

Y. M. I don't know

O. M. Neither does any one else.

Y. M. What is the Master?—or, in common speech the Conscience? Explain it.

O. M. It is that mysterious autocrat, lodged in man, which compels the man to content its desires. It may be called the Master Passion—the hunger for Self-Approval.

Y. M. Where is its seat?

O. M. In man's moral constitution. . . . It is indifferent to the man's good; it never concerns itself about anything but the satisfying of its own desires. It can be trained to prefer things which will be for the man's good, but it will prefer them only because they will content it better than other things would. . . . It is a colorless force seated in the man's moral constitution. Let us call it an instinct—a blind, unreasoning instinct, which cannot and does not dis-

tinguish between good morals and bad ones, and cares nothing for the results to the man provided its own contentment can be secured; and it will always secure that. It is not always seeking money, it is not always seeking power, nor office, nor any other material advantage. In all cases it seeks a spiritual contentment, let the means be what they may. Its desires are determined by the man's temperament—and it is lord over that. Temperament, Conscience, Susceptibility, Spiritual Appetite, are in fact the same thing. Have you ever heard of a person who cared nothing for money?

In spite of Mark Twain's idea that no amount of theory will disturb man's happiness or his self content, he did not publish his book in his lifetime, and his motives for it are discussed at the end of his conversations, as follows:

Y. M. I have thought over all these talks, and passed them carefully in review. With this result. That—that—are you intending to publish your notions about man some day?

O. M. Now and then, in these past twenty years, the Master inside of me has half-intended to order me to set them to paper and publish them. Do I have to tell you why the order has remained unissued, or can you explain so simple a thing without my help?

Y. M. By your doctrine, it is simplicity itself: Outside influences moved your interior Master to give the order; stronger outside influences deterred him.

O. M. That is correct. Well?

Y. M. Upon reflection I have arrived at the conviction that the publication of your doctrines would be harmful. Do you pardon me?

O. M. Pardon you? You have done nothing. You are an instrument—a speaking-trumpet. Speaking-trumpets are not responsible for what is said through them.

Y. M. Well to begin: it is a desolating doctrine; it is

not inspiring, enthusing, uplifting. It takes the glory out of man, it takes the pride out of him, it takes the heroism out of him, it denies him all personal credit, all applause; it not only degrades him to a machine, but allows him no control over the machine; makes a mere coffee-mill of him, and neither permits him to supply the coffee nor turn the crank; his sole and piteously humble function being to grind coarse or fine, according to his make, outside impulses doing all the rest.

O. M. It is correctly stated.

ALL CREDIT BELONGS TO GOD.

In connection with Mark Twain's condemnation of man's pride and his wrong claim to glory and praise, the Old Man gives all the credit of the accomplishments of man to God. Concerning the virtues of man the Old Man raises the question "Who manufactures them"? and the Young Man answers "God." In comment on this solution of the Young Man, the Old Man defends his position thus:

O. M. Where does the credit of it belong?

Y. M. To God.

O. M. And the glory of which you spoke, and the applause?

Y. M. To God.

O. M. Then it is you who degrade man.

Y. M. You have made a machine of him.

O. M. Who devised that cunning and beautiful mechanism, a man's hand?

Y. M. God.

The Old Man sees no wrong in taking the vainglory of the man out of him and crediting God with all blame as well as praise, and he adds: "I am merely calling attention to the fact, nothing more. Is it wrong to call attention to the fact, is it a crime?"

Mark Twain's main argument as to the machinelike operations of the human mind is quite sound, but over the facts he casts a gloom which is of his own making. According to him the truth that man is a machine takes away from man all his dignity, for everything that

man does, everything he thinks or invents or plans, comes to him from the outside, and the very start of man is due to outside influence; and this is perfectly true. It is the outside from which we gather our experience, and experience builds up man. Man appropriates the building-stones of his mentality from experience, and makes them his own. Man's mind is an echo of his law-ordained surroundings and reflects the universal order of the cosmos.

Mark Twain is right in saying that everything of our mind comes from the outside. Even our inborn tendencies have been built up by what the Buddhists call prior existences. They come to us by heredity and by education; there is nothing in us which we do not owe to the surrounding world. This is a truth which must be acknowledged, but we deny that it carries with it any cause for depression or melancholy. On the contrary we find that we are children of the universe and that the universe has produced us; or, to speak religiously, every one of the creatures of the universe is a child of God. And why should we therefore be alarmed at the idea that man is not original when we see that he is simply a child of the All from which he has sprung? This, it seems to me, is rather a cause for rejoicing than for a pessimistic outcry of despair. We will end our discussion of Mark Twain's philosophy in quoting a few lines from *De Rerum Natura*:

> "Thus ever do a thousand subtle threads
> Me intertwine with that surrounding world
> Wherein I move. I contemplate the Vision:
> Of me it is a part. I am the All;
> Albeit that which into Self hath grown
> Is of the world a part: This bides, I pass.
> But lo! e'en then, in that which unto me
> The not-I seemed, I evermore endure."

LA METTRIE'S VIEW OF MAN AS A MACHINE.[1]

LIFE AND CHARACTER OF LA METTRIE.

Summed up briefly, the facts of Julien Offray de la Mettrie's life are as follows: He was born December 25, 1709, in St. Malo. He first studied the humanities with brilliant success at the college of Coutances and then in Paris. In 1725 he studied natural philosophy at the college of Harcourt and took the degree of doctor of medicine at Rheims and began to practice there. In 1733 he went to Leyden and studied under Boerhaave. The next year he translated a treatise of his master and added to it an original work of his own which gained him the jealousy of older physicians. The next years were spent in St. Malo where besides carrying on an active practice he translated and wrote medical works of original value. In 1742 he went to Paris and became physician of the guards but lost his patron, the Duke of Gramont, in an early battle. In the same campaign, La Mettrie suffered from a severe fever, and after his recovery had his philosophic conjectures printed under the title "The Natural History of the Soul." This work aroused the wrath of the theologians and in 1746 he went to Leyden to philosophize in peace. Here he wrote "Penelope," a satire on quackery, and "Man a Machine." The latter brought down upon him the displeasure of the Leyden clericals of all denominations. His genius and unfortunate condition procured him a refuge in Prussia with a pension from Frederick the Great. He went to Berlin in 1748 where he was made a member of the Royal Academy of Science. He died November 11, 1751, leaving a widow and a five year old daughter. His royal patron closed the eulogy which he wrote for the Royal Academy with these words:

"La Mettrie was born with a fund of natural and inexhaustible

[1] An English translation of La Mettrie's well-known work, *L'homme machine*, has recently been published by The Open Court Publishing Company (Chicago, 1912) with philosophical and historical notes by Gertrude Carman Bussey.

gaiety; he had a quick mind, and such a fertile imagination that it made flowers grow in the arid field of medicine. Nature had made him an orator and a philosopher; but a yet more precious gift which he received from her was a pure soul and an obliging heart. All those who are not imposed upon by the pious insults of the theologians mourn in La Mettrie a good man and a wise physician."

During his life La Mettrie was subject to persecutions and also to the disappointment that he found no serious treatment of the great problem he had raised among men of science but on the contrary was pelted with dirty accusations. He was of a buoyant tem-

JULIEN OFFRAY DE LA METTRIE.

perament, and during the worst times of his life he laughed at trouble and showed himself ready to go down in the shipwreck of the storm which his bold love of truth had provoked. As an instance of the attacks to which he was exposed, we quote one of the opinions of the historians of philosophy uttered by Professor Hettner, who says of him: "Lamettrie is a bold libertine who sees in materialism only the justification of his profligacy," and this opinion is recorded in one of the best histories of philosophy.

A contemporary artist, G. F. Schmidt, made an engraving of the ridiculed advocate of mechanicalism with the intention of representing him as Democritus the laughing philosopher. It is the

only portrait of him that has come down to us, and since La Mettrie at the time was an object of general contempt it attracted a good deal of attention. A French actor and a friend of La Mettrie, M. Désormes, had the picture accompanied by a few French lines which read as follows:

"Sous ces traits vifs, tu vois le maître
Des jeux, des ris et des bons mots;
Trop hardi d'avoir de son être
Osé débrouiller le cahos.
Sans un sage il était la victime des sots."

We translate these lines as follows:

"These features show truly the master
Of jollities, laughter and wit;
Too bold he was in his nature
To take off the corners of it.
He would have been but for one sage
The victim alas! of the fools of his age."

Lessing the great art critic not only of his age, but probably of all time, saw this picture and used it as an instance to prove one of his theories. He was not an admirer of La Mettrie, and seeing in the sarcastic laugh of this modern Democritus a grin, he condemned in a rather hasty and overcritical mood all the pictures which portrayed laughing faces.

Lessing says in his *Laokoon*: "La Mettrie who had himself painted and engraved as a second Democritus laughs only the first time one looks at him. Repeated contemplation changes the philosopher into a fool, his laughter changes into a grin." On the basis of this instance Lessing declares that neither a sculptor nor a painter should represent anything that can not but be transitory, because phenomena which burst out suddenly and disappear at once, as for instance laughter, produce through their prolongation in art an unnatural and therefore unpleasant impression, which changes what might be pleasant into something disgusting and repelling. This view goes too far. With all due respect for Lessing's ability as a critic, we do not share his opinion in this special point. It is by no means inadvisable to paint galloping horses or flying birds or a dancing Bacchante. We deem it quite possible to present laughing portraits which will always remain pleasant, but in the present case we must bear in mind that the artist intended to depict a sarcastic grin rather than an amiable smile. La Mettrie's character was not such as to win the sympathy of his contemporaries;

he ridiculed others with biting sarcasm and, as expressed in the verse of Désormes, he disdained to take off the corners of his satirical nature.

La Mettrie was the first to uphold in unmistakable language the application of the mechanistic principle to man. In addition to publishing his book *L'homme machine* he carried on a long and interesting controversy with his adversaries, among whom his main victim was the famous naturalist Haller, a Swiss by birth, a poet and at the same time professor of medicine in the University of Göttingen.

SIGNIFICANCE OF HIS PHILOSOPHY.

La Mettrie's significance in the history of philosophy has sometimes been underrated and is now often overrated. He is decidedly a prominent thinker, a representative of a great and important truth, the mechanistic principle, and he has brought it before the public in a most forcible way so as to have it connected with his name for all time to come. He was a martyr of his cause, and, in fear of being lynched, he had to flee from France and again from Holland, without being able to take with him any property nor even sufficient clothes for the journey, but he had the good fortune to be protected by a royal genius, the great and noble king Frederick the Second of Prussia, who was rightly surnamed the Great not only because he gained many victories on the battlefield against great odds, but above all because he was a philosopher on the throne.

It is a pity that La Mettrie, this clear thinker and exact scientist, was yet small enough to attack his enemies in a sarcastic way which ought to have been beneath the dignity of so great a man. Poor Haller, trained in the ponderous methods of German science, a pious Christian of a most reactionary and dogmatic trend of thought, was scarcely a match for the nimble wit of his French antagonist and so he fell repeatedly a prey to the traps which La Mettrie laid for him. Haller did not even understand the irony with which La Mettrie dedicated to him the book *L'homme machine,* and he did not see that the plagiarism which his enemy committed was really a satire and a parody. La Mettrie published a French translation of Haller's love verses and praised the poet, but in doing so La Mettrie sarcastically turned Haller's tender sentiments into frivolous jokes.

We can easily understand how an impartial reader of *L'homme machine* will become prejudiced against the author by the vulgar

instances which are introduced to prove the contention of the book. La Mettrie would have been a better representative of his theory if his presentation had been more dignified, and if he had abstained from the improprieties of his humor.

Without shutting our eyes to all his shortcomings we do not mean to belittle La Mettrie or to depreciate the work he has done for a great cause. Let us remember what his noble protector Frederick the Great said about him in his eulogy when he praised not only the high standing of his philosophical compass but also the purity of his life which was indubitable in spite of the cynicism of his language.

La Mettrie's sarcasm lays him open to the suspicion of malevolence, but we know through Frederick the Great that he was an amiable friend and it is not likely that his satirical view need be interpreted as a mean streak in his character. We can not assume that he took delight in hurting the feelings of others, but we may easily understand how the witty Frenchman enjoyed a laugh at his enemies' expense and how difficult it was for him to suppress a joke—especially if the joke served a higher purpose, if it helped to point out the truth of his cause.

A key to the motive of La Mettrie's sarcasm and his disregard for the feelings of others may be found in the preface to the edition of his collected works where he confesses to cling to the principle thus expressed: "Write as if thou wert alone in the universe and hadst nothing to fear from the jealousies and prejudices of the people. Otherwise thou wilt miss thy purpose."

SINCERITY.

It has been pointed out by Friedrich Albert Lange and others, that there is not the slightest reason to doubt the sincerity of La Mettrie's work. Certainly he did not seek pecuniary gain, for he could have fared much better in life if he had kept quiet. He was an able and very successful physician and we learn from his medical satires that he knew but too well how much better quackery paid than a rational and honest treatment of patients. In fighting for honesty in the medical profession, he knew that he would encounter much hostility, yet he preferred stating the truth to the easier method of following the ways of his colleagues by gaining the confidence of the powerful and influential to his own advantage.

We need not approve of La Mettrie's methods in order to think that there is no reason to doubt his good intention when holding up

his opponents to ridicule, and some of them too are certainly at fault, for their accusations of licentiousness have never been proved. Even his enemies have never produced anything positive against him which would show his character in a bad light. Though it would be out of place to present him as a saint, we have no reason to assume that he was worse than the average men of his time. One of the worst accusations that have repeatedly been urged against him was the good word he spoke in defense of criminals, and yet herein we must recognize that in the progress of civilization the same thought has been expressed by judges as well as by the public in general, and our present methods of treating criminals has decidedly approached La Mettrie's conception of justice.

We must recognize that La Mettrie has become the scapegoat of materialism, and thinkers who accept his very theories have long been in the habit, as F. A. Lange pointed out, of excusing themselves by denouncing La Mettrie, and pouring out upon his head the vials of their indignation, protesting that they themselves were not of his type. It was a cheap way of gaining the reader's *captatio benevolentiae,* at the cost of a much maligned representative of materialism.

HIS SIGNIFICANCE.

La Mettrie remained the scapegoat of an ostracized philosophy until Friedrich Albert Lange turned the tide. In his *History of Materialism,* Lange stood up for La Mettrie and corrected the wrong impressions, due to slander and misrepresentation. Lange's chapter on La Mettrie as the most prominent and most consistent representative of materialism[2] is probably still the best that has been written on him. It has been well supplemented recently by Dr. Ernst Bergmann, a *Privatdozent* of Leipsic, in his little book *Die Satiren des Herrn Maschine* (Leipsic, 1913).

We sum up: La Mettrie states an important truth and we grant that all motions, including the entire activity of the human brain, are mechanical and that therefore and in this sense man is a machine. On the other hand we do not hesitate to condemn in La Mettrie his onesidedness, the impropriety of his presentation in some details and the sarcastic manner of his polemics.

By means of short extracts we will let La Mettrie state his position so that the reader can easily form his own opinion of it. He says:

[2] *Geschichte des Materialismus,* Part IV, Chapter 2. (Vol. I, pp. 326,359.)

"It is not enough for a wise man to study nature and truth; he should dare state the truth for the benefit of the few who are willing and able to think. As for the rest, who are voluntarily slaves of prejudice, they can no more attain truth, than frogs can fly.

"I reduce to two the systems of philosophy which deal with man's soul. The first and older system is materialism; the second is spiritualism."

MECHANICALISM.

La Mettrie claims that his theory is based on experience, but obviously experience is not in favor of the mechanistic theory. Our belief in mechanicalism is the result of a purely *a priori* consideration. Even at the present day chemistry must confess that a mechanical explanation of strictly chemical processes is as yet impossible. We must assume the theory of mechanicalism as an inevitable conclusion of the principle that all changes are transformation, but we have not yet demonstrated this conclusion in experience.

A chemical combination shows absolutely new qualities which can not be explained as a mixture of the qualities of its ingredients, and we have as yet no means to account for higher combinations by a mechanical interaction. Nevertheless many chemists accept the mechanistic principle as applicable to chemical combinations because speculation can discover no other way of explaining processes of any kind than as results of a mechanical interaction or cooperation of parts. Under these conditions we see ourselves obliged to assume that there is a molecular mechanics, the proportions of which, however, are too infinitesimally small for our best microscopes to make visible. Accordingly we must be satisfied with the belief that ultimately they are mechanical. So far at least we know nothing to the contrary, nothing that would definitely destroy our hope that there are no processes the nature of which could not ultimately be explained by the interrelations of their parts.

HIS METHODS.

La Mettrie is unconscious that he is arguing *a priori,* and it is a common occurrence that those naturalists who clamor most for the necessity of limiting science to experience are most strongly carried away by *a priori* methods. They believe that we must rely on experience alone, and should not be allowed to generalize; yet naturalists of this type are most insistent in declaring that natural laws suffer no exceptions. The statement may be true enough, but

it can never be proved by experience nor by induction; in its sweeping universality it is obviously a deduction from general principles. La Mettrie is no exception to the general rule, and his many evidences of the interconnection between soul and body, true as they may be, can not carry conviction, because they prove nothing but the fact stated, i. e., an interconnection between soul and body, not their identity.

"Man is so complicated a machine that it is impossible to get a clear idea of the machine beforehand, and hence impossible to define it. For this reason, all the investigations have been vain, which the greatest philosophers have made *a priori,* that is to say, in so far as they use, as it were, the wings of the spirit. Thus it is only *a posteriori* or by trying to disentangle the soul from the organs of the body, so to speak, that one can reach the highest probability concerning man's own nature, even though one can not discover with certainty what his nature is.

"Let us then take in our hands the staff of experience, paying no heed to the accounts of all the idle theories of philosophers. To be blind and to think that one can do without this staff is the worst kind of blindness. How truly a contemporary writer says that only vanity fails to gather from secondary causes the same lessons as from primary causes!"

It is true enough that we need the staff of experience; we must investigate the facts, but our main conclusion will be the result of a deduction from general principles. Who for instance can prove the truth of evolution from experience? How is it possible to collect all the facts in question? There is so much talk about the missing link! We ought to bear in mind that if one link in the chain is discovered there are others missing. In all scientific reasoning we have to employ both the method of logic, which is *a priori,* and of the facts of experience, which is *a posteriori.* The two are the web and woof of all scientific work and without either our endeavor to widen the horizon of our positive knowledge will yield no profit.

HIS ARGUMENTS.

Here are specimens of La Mettrie's arguments:

"In disease the soul is sometimes hidden, showing no sign of life; sometimes it is so inflamed by fury that it seems to be doubled; sometimes, imbecility vanishes and the convalescence of an idiot produces a wise man. Sometimes, again, the greatest genius be-

comes imbecile and loses the sense of self. Adieu then to all that fine knowledge, acquired at so high a price, and with so much trouble! Here is a paralytic who asks if his leg is in bed with him; there is a soldier who thinks that he still has the arm which has been cut off. The memory of his old sensations, and of the place to which they were referred by his soul, is the cause of his illusion, and of this kind of delirium. The mere mention of the member which he has lost is enough to recall it to his mind, and to make him feel all its motions; and this causes him an indefinable and inexpressible kind of imaginary suffering. This man cries like a child at death's approach, while this other jests. What was needed to change the bravery of Caius Julius, Seneca, or Petronius into cowardice or faintheartedness? Merely an obstruction in the spleen, in the liver, an impediment in the portal vein. Why? Because the imagination is obstructed along with the viscera, and this gives rise to all the singular phenomena of hysteria and hypochondria.

"What can I add to the stories already told of those who imagine themselves transformed into wolf-men, cocks or vampires, or of those who think that the dead feed upon them? Why should I stop to speak of the man who imagines that his nose or some other member is of glass? The way to help this man regain his faculties and his own flesh-and-blood nose is to advise him to sleep on hay, lest he break the fragile organ, and then to set fire to the hay that he may be afraid of being burned—a fear which has sometimes cured paralysis.....

"As the motion of the blood is calmed, a sweet feeling of peace and quiet spreads through the whole mechanism.....

"Is the circulation too quick, the soul can not sleep. Is the soul too much excited, the blood can not be quieted: it gallops through the veins with an audible murmur. Such are the two opposite causes of insomnia.....

"The human body is a machine which winds its own springs. It is the living image of perpetual movement. Nourishment keeps up the movements which fever excites. Without food, the soul pines away, goes mad, and dies exhausted.....

"Pope understood well the full power of greediness when he said:

> "'Catius is ever moral, ever grave,
> Thinks who endures a knave is next a knave,
> Save just at dinner—then prefers no doubt,
> A rogue with ven'son to a saint without.'

"Elsewhere he says:

> "'See the same man in vigor, in the gout
> Alone, in company, in place or out,
> Early at business and at hazard late,
> Mad at a fox chase, wise at a debate,
> Drunk at a borough, civil at a ball,
> Friendly at Hackney, faithless at White Hall.'....

"Raw meat makes animals fierce, and it would have the same effect on man.....

"We think we are, and in fact we are, good men, only as we are gay or brave; everything depends on the way our machine is running.....

"In general, the form and the structure of the brains of quadrupeds are almost the same as those of the brain of man; the same shape, the same arrangement everywhere, with this essential difference, that of all the animals man is the one whose brain is largest, and, in proportion to its mass, more convoluted than the brain of any other animal.....Fish have large heads, but these are void of sense, like the heads of many men. Fish have no *corpus callosum,* and very little brain, while insects entirely lack brain.....

"I shall draw the conclusions which follow clearly from these incontestable observations: 1st, that the fiercer animals are, the less brain they have; 2d, that this organ seems to increase in size in proportion to the gentleness of the animal; 3d, that nature seems here eternally to impose a singular condition, that the more one gains in intelligence the more one loses in instinct.

"Do not think, however, that I wish to infer by that, that the size alone of the brain, is enough to indicate the degree of tameness in animals; the quality must correspond to the quantity, and the solids and liquids must be in that due equilibrium which constitutes health.

"If, as is ordinarily observed, the imbecile does not lack brain, his brain will be deficient in its consistency—for instance, in being too soft. The same thing is true of the insane, and the defects of their brains do not always escape our investigation. But if the causes of imbecility, insanity, etc., are not obvious, where shall we look for the causes of the diversity of all minds? They would escape the eyes of a lynx and of an argus. A mere nothing, a tiny fibre, something that could never be found by the most delicate anatomy, would have made of Erasmus and Fontenelle two idiots, and Fontenelle himself speaks of this very fact in one of his best dialogues."

MORALITY.

In comparing the morality of animals and men, La Mettrie censures human behavior, for, says he,

"Our compatriots fight, Swiss against Swiss, brother against brother, recognize each other, and yet capture and kill each other without remorse, because a prince pays for the murder."

He has an excuse for criminals, saying:

"I believe and admit that these wretches do not for the most part feel at the time the enormity of their actions.....But it is much to be wished that excellent physicians might be the only judges.....If crime carries with it its own more or less cruel punishment, why should we frighten the imagination of weak minds by a hell?"

La Mettrie's sarcasm comes out in his presentation of the case of theism *vs.* atheism. He claims to be the skeptic who would remain impartial. He pretends to have a leaning towards theism and introduces his atheistic views by some Pyrrhonian, whom he incidentally calls "this wretch" (*cet abominable homme*):

"I do not mean to call in question the existence of a supreme being; on the contrary it seems to me that the greatest degree of probability is in favor of this belief. But since the existence of this being goes no further than that of any other toward proving the need of worship, it is a theoretic truth with very little practical value. Therefore, since we may say, after such long experience, that religion does not imply exact honesty, we are authorized by the same reasons to think that atheism does not exclude it.....

"Let us not lose ourselves in the infinite, for we are not made to have the least idea thereof, and are absolutely unable to get back to the origin of things. Besides it does not matter for our peace of mind, whether matter be eternal or have been created, whether there be or be not a God. How foolish to torment ourselves so much about things which we can not know, and which would not make us any happier even were we to gain knowledge about them!....

"I do not take either side.

"'Non nostrum inter vos tantas componere lites.'

"This is what I said to one of my friends, a Frenchman, as frank a Pyrronian as I, a man of much merit, and worthy of a better fate. He gave me a very singular answer in regard to the matter. 'It is true,' he told me, 'that the *pro* and *con* should not disturb at all the soul of a philosopher, who sees that nothing is proved with

clearness enough to force his consent, and that the arguments offered on one side are neutralized by those of the other. However,' he continued, 'the universe will never be happy, unless it is atheistic.' Here are this wretch's reasons. If atheism, said he, were generally accepted, all the forms of religion would then be destroyed and cut off at the roots. No more theological wars, no more soldiers of religion—such terrible soldiers! Nature infected with a sacred poison, would regain its rights and its purity. Deaf to all other voices, tranquil mortals would follow only the spontaneous dictates of their own being, the only commands which can never be despised with impunity and which alone can lead us to happiness through the pleasant paths of virtue.

"Such is natural law: whoever rigidly observes it is a good man and deserves the confidence of all the human race. Whoever fails to follow it scrupulously affects, in vain, the specious exterior of another religion; he is a scamp or a hypocrite whom I distrust.....

"We do not seek here the votes of the crowd. Whoever raises in his heart altars to superstition, is born to worship idols and not to thrill to virtue.

"But since all the faculties of the soul depend to such a degree on the proper organization of the brain and of the whole body, that apparently they are but this organization itself, the soul is clearly an enlightened machine. For finally, even if man alone had received a share of natural law, would he be any less a machine for that?"

HIS CONCLUSION.

La Mettrie's conclusion is this:

"The soul is therefore but an empty word, of which no one has any idea, and which an enlightened man should use only to signify the part in us that thinks....He is to the ape, and the most intelligent animals, as the planetary pendulum of Huyghens is to a watch of Julien Leroy.....I believe that thought is so little incompatible with organized matter, that it seems to be one of its properties on a par with electricity, the faculty of motion, impenetrability, extentension, etc."

As to our destiny after death La Mettrie again introduces a bit of sarcasm and under the pretext of skepticism argues in favor of the possibility of immortal machines. Stating that "we know absolutely nothing about the subject," he continues:

"To assert that an immortal machine is a chimera or a logical fiction, is to reason as absurdly as caterpillars would reason if, see-

ing the cast-off skins of their fellow-caterpillars, they should bitterly deplore the fate of their species, which to them would seem to come to nothing. The soul of these insects (for each animal has its own) is too limited to comprehend the metamorphoses of nature. Never one of the most skilful among them could have imagined that it was destined to become a butterfly. It is the same with us. What more do we know of our destiny than of our origin? Let us then submit to an invincible ignorance on which our happiness depends."

It is worth while noticing that the practical application of his views comes ultimately to the same kind of ethics that religious people would preach.

"On the other hand, there is so much pleasure in doing good, in recognizing and appreciating what one receives, so much satisfaction in practising virtue, in being gentle, humane, kind, charitable, compassionate and generous that I consider as sufficiently punished any one who is unfortunate enough not to have been born virtuous.....

"He who so thinks will be wise, just, tranquil about his fate, and therefore happy. He will await death without either fear or desire, and will cherish life (hardly understanding how disgust can corrupt a heart in this place of many delights); he will be filled with reverence, gratitude, affection, and tenderness for nature, in proportion to his feeling of the benefits he has received from nature; he will be happy, in short, in feeling nature, and in being present at the enchanting spectacle of the universe, and he will surely never destroy nature either in himself or in others. More than that! Full of humanity, this man will love human character even in his enemies. Judge how he will treat others. He will pity the wicked without hating them; in his eyes, they will be but mis-made men. But in pardoning the faults of the structure of mind and body, he will none the less admire the beauties and virtues of both....and following the natural law given to all animals, he will not wish to do to others what he would not wish them to do to him.

"Let us then conclude boldly that man is a machine, and that in the whole universe there is but a single substance differently modified.....Such is my system, or rather the truth, unless I am much deceived. It is short and simple. Dispute it now who will."

EXTRACTS FROM PROF. W. B. SMITH'S ARTICLE "PUSH? OR PULL?"[1]

LAPLACE BELIEVES IN ABSOLUTE DETERMINISM.

LAPLACE has rightly declared that a sufficiently powerful human intellect armed with differential equations and an absolutely exhaustive knowledge of the physical universe at any stage of its being, could thence deduce its necessary and certain condition for any and all future times, or that knowing one moment completely he would know or at least be able to find out all the history of the interminable ages to come. Such an intelligence has been called a Laplacian intelligence, and it is not strange that man should pride himself on the creation or at least the possession of such stupendous powers of prophecy, of which he does indeed make brilliant use in forecasting eclipses and other phenomena exactly, to the second. Similarly, he vaunts that he could predict the exact spot, the exact speed, direction, and acceleration of each and every molecule now in our bodies, not for a day or week or year, but for all the æons of everlasting Time....

When now we ask how we know that all this is true, that To-day and To-morrow are thus despotically dominated by Yesterday, that some single push from behind has propagated itself like an ether wave through all the world and determined all that is or has been or will be, the answer seems at first utterly inadequate.... When we ask how we know that A's movement caused B's, we are dumb....The most, the best, the last that we can know, is that the one event followed the other in this case, and similarly in all hitherto observed cases, and we may believe ever so confidently and unshakably that such a relation will always hold good. But the causal tie we shall never perceive, we shall never know that there is any at all.

[1] Dr. Smith's article will be found in full in *The Monist*, of January, 1913.

CAUSE AND EFFECT "DO NOT EVEN TOUCH HANDS."

In a passage that has become classic, Kirchhoff declared even as long ago as 1877 that mechanics is the science of motion, its problem being to *describe* the motions of nature completely and in the simplest way. You observe that there is no reference here to cause or to effect or even to *force*. The motions in nature from the rush of a planet to the vibrations of a molecule, are to be *described* completely and simply, as a dance of atoms, where the motions and evolutions of each dancer are highly complicate and intricate and definitely related to those of every other, yet each carries on its own dance, and naught is said of one's affecting another. It is not a waltz, they do not even touch hands....You may see the ball A strike upon the ball B, and see this latter speed away, but you know that the motion of the one had naught to do with the motion of the other.

LIFE LOSES ITS MEANING.

Can this be all? What possible even least worth or meaning or self-justification can there be in a course of history that is born from chaos and dies in chaos, to be re-born from chaos again? Of what avail for Nature to mount from her funeral pyre and soar and shine in everlasting cycle, if only to sink back again in night and death, like a succession of aimless rockets shot up into the empty dark?....

Whether puny man be satisfied with this procedure of Nature, makes no difference; she is utterly devoid of feeling and cares not a straw for all the men in the world. *Sauve qui peut* is her motto. Such is "natural selection," the "survival of the fittest," where there is absolutely no standard or evidence of fitness but the fact of survival. This survivor is one of the fittest. How do you know? Because he has survived; therefore he must have been fitter than those who did not survive....

This appalling conception of history is the unavoidable consequence of any and every theory that accepts the outward universe at its face-value, as an ultimate reality, that thinks the world under the category of causality, that seeks to understand the Present and the Future as a necessary consequence of the Past. The whole doctrine is in the last degree logical, it has achieved great triumphs in the annals of thought, and it may very profitably be entertained

as merely provisional, as a directive or working hypothesis, as an outward sensual symbolism of an inward spiritual truth. But as the truth itself, as the final word in world-interpretation, no matter by what high-placed prophets it may be preached, we must reject it utterly, not only as false, but also as an abomination.

THE FUTURE DETERMINING THE PRESENT.

We cannot start Nature out totally blind, acting perfectly at random, otherwise she could never select at all, having no principle of selection. Even in her most elementary processes there must be some choice, some preference for this rather than that. Otherwise why should Newton's gravitation take place according to inverse squares rather than inverse cubes?....A choice cannot refer to what has been or is, but only to what shall be. By the fittest we do not mean the fittest for the Past but for the Future; if not fittest for the Future, it will not survive. We may see then that the conception of a blind or aimless nature-process is not ultimately realizable in thought....

Let any one ask himself why he is present at a certain lecture. If he gives the answer in terms of the Past, in terms of push, in terms of matter or of mass and motion, all of which expressions are equivalent, then he has no choice....It is a matter of immediate knowledge, as primary as primary can be, that no possible assignment of causes, of antecedent conditions, can ever satisfy the questioner, who is seeking for reasons and not causes. Still further, observe that the only satisfying answer will be in terms of the Future, and not of the Past. The man will say, "I desired to hear and see something or somebody." At each instant the desire was a present experience, but the thing desired was and remains from first to last in the Future....It is a tug from before, not a thrust from behind; it is the pull of the Future, not the push of the Past....

We find finally but one Reason in a million forms and a thousand degrees. It is Will, Desire, Wish, Want, Appetite, Craving, Yearning, Impulse, Instinct, Life-urge, or what you will....

So far as we can see, the Past has for it no existence whatever. It may indeed sound strange thus to speak of the Future as solely determining the Present, since we are so used to speak of the Past as the sole-determiner. And yet such is the unique form of inner experience. Peer as deeply and as fixedly as you will into the abysses of your own being, you shall always find therein that it is

all and only the Future that determines and in a way creates the Present. At every instant the Past crumbles into nothingness under our feet and we flee from it as from a levee sinking into the Mississippi, while the eternal Future, like the eternal Feminine, draws us upward and on....

We may say then that it is To-morrow and not Yesterday that makes To-day what it is. In itself it is no more and no less plausible that the Future than that the Past should determine the Present; but the undeniable Fact is that the determinant is the Future and not the Past.

THE TWO VIEWS CONTRASTED.

Here then are the wide world-views contrasted. On the side of matter, of cause and effect, the universe is one immeasurable Memory. On the side of mind, of purpose and aim, it is one unbounded Hope....During the marvelous nineteenth century, the emphasis fell with a heavy and heavier stroke upon the Past. The key-note of this wondrous orchestration was given by Goethe in his deep-thoughted oracle: "The question for natural science is not what use have oxen for their horns, but how did they come by them?" Here all reference to the future is ruled out decisively; the forward gaze of mind is denied all recognition, the category of purpose is struck out of our thinking. The only question is one of cause and effect; the Laplacian intelligence builds up backward, backward forever, and forward interminably, but notice wherewith it builds. Only with the ashes of extinct volcanoes. Never at any point can it insert purpose or aim or meaning into its sublime construction; never can it even raise, much less answer, the question, *Why?* There was in fact no why, no reason for aught in this endless history.....

It is a false antagonism between the causative and the teleological conceptions of the universe. Willingly we surrender the world of matter to the despotism of the Past, to the tyranny of causality, to the blind predestination of the primal Push. For we know that this world is only a kinematographic representation of the eternal life of the spirit, the only ultimate reality. Willingly we admit that there is no end nor aim nor purpose in the blinding storm of the atomic world, for we know that the Kingdom of Ends is within us. It is in the conscious and no less in the unconscious life of the soul that we find the Future sole-reigning, that we behold

unveiled the face of the everlasting Striving, that we feel the pull of the increasing purpose of the universe. From this point of view we shall be able to solve many antinomies, to reach out the hand of sympathy and friendship to warring champions of opposing doctrines....

It is the end, the aim, that rises before us as guiding star in this twentieth century interpretation of history, yea, we may indeed proclaim, "The Kingdom of Ends is drawn nigh."

THE SPIRIT IN THE WHEELS: THE MECHANISM OF THE UNIVERSE AS SEEN BY A THEIST.

DR. BIXBY'S BOOK.

DR. James Thompson Bixby has published under the title *The Open Secret* a book which he characterizes a "A Study of Life's Deeper Forces,"[1] and the first problem he attacks is the question of vitality and mechanism. All other problems which he discusses are mere side issues. They are treated in nine more chapters entitled: The Cosmic Motor Power, Atom and Spirit, Purpose in Nature, Law and Providence, Good the Final Goal, Fate or Choice, Our Self-Made World, Partners in World-Making, Search the Deep Things.

Dr. Bixby is a theist; he recognizes the significance of mechanism, but takes his stand on vitalism. He finds the most appropriate allegory for his view in Ezekiel's vision of the winged cherubim, which has been called the "spirit of the living creatures in the wheels." He grants that the mechanics of these wheels is impossible, nevertheless the general idea symbolized by this vision is not merely quite rational but most significant and instructive.

Dr. Bixby continues: "The essential lesson of the vision is that every living creature has around him some revolving machinery, and that within all the mechanical wheel-works which are visible there is a living soul as the motor power and directing agency of the enclosing enginery."

Dr. Bixby's book is written from the standpoint of an advanced teleology. The author is sufficiently acquainted with modern science to understand the scientific position and states it in fairness and without animosity; yet he condemns it not only as utterly wrong, but also as chilling our faith and as dangerous.

We will here state Dr. Bixby's position in his own words

[1] Published by the American Unitarian Association, Boston, 1912.

without any criticism on our part, referring our readers to our own solution of the same problem presented in the editorial article on mechanicalism.

THE CONTRAST OF THE OLD AND NEW VIEWS.

"To the chanters of the Vedas every flickering flame was a living creature, an appearance of Agni, the fire god; the Greeks beheld in every rustling tree a dryad, in every babbling fountain a water nymph. The prevalent faith of all the early nations, as of savages to-day, was similar. Sun and moon, cloud and storm, evening breeze, each had its impelling divinity. Each spirit followed his own caprice on the impulse of the moment. Nowhere was there any fixed order. With the ascent of thought to the higher faith of monotheism, the only change, for a long time, was that every catastrophe or trouble was interpreted as a retribution sent from the Supreme God upon the sufferer for some known or secret sin. Life was a succession of special providences, and the career of every prophet or saint a series of signs and wonders, manifesting the direct intervention of the Most High.

"Our modern thought, however, has gone to the very opposite extreme. No wind bloweth where it listeth; the wildest gust has its appointed course from which it cannot swerve.

"By uniform laws, every continent has been moulded and uplifted. By simple processes of variation, struggle for existence and accumulation of hereditary gains, the rudimentary creatures have developed into complex and elaborate organisms. In all these diverse species, in all their ingenious organs and vital adjustments, in the rise, growth and decay of nations, and in the most astonishing coincidences of personal or social events, modern science sees only the products of that great machine-shop of interacting, unresting wheels of law and force that we call nature."

IN THE NEW VIEW THERE IS NO ROOM FOR GOD.

"The natural result of this extension of the network of law and its mechanical processes over the whole universe is at first most chilling to faith. When the believer who has been brought up in the common conception of the Deity as a vague presence immensely greater than man, but with the personal loves and dislikes, moods of wrath, pity, imperfect counsels, changeable purposes and incomplete forethought which are characteristic of hu-

manity—when such a believer, I say, comes by scientific investigation to abandon these ideas, what a loss he feels! In what a freezing waste and friendless world he seems to find himself. Having always thought of God as the great intervener and repairer of the cosmic system, manifest in every mystery or eccentricity of the processes of nature, this reduction of the perturbations and irregularities of the world to mechanical laws seems to banish God from the universe....God has seemed to be pushed outside the verge of his own universe and made henceforth a superfluous hypothesis."

THE MACHINERY OF LIFE.

"The very condition of vitality seems to be this constant rotary motion. In man, the blood under the unwearied beat of the heart must course out to the capillaries and brain cells with its fresh supplies of nutriment and energy and must then flow back again to the lungs to become purified and recharged with oxygen. The nerve currents must flow with their sense impressions from the surface up the sensory nerves to the brain and back again in appropriate motor responses to the muscles. In lung, heart, ganglion, blood corpuscle, cell and molecule, there is a constant round. There is continual efflux and influx, consumption and replenishment. It is only by this ceaseless dying and as ceaseless rebirth, that animate beings keep alive.

"And to maintain this circulation of life, what curious and complicated machinery in every part of the body—the valves of the heart, the batteries of the brain, the triangular muscle of the chin, the levers of arm and leg, with their beautiful ball and socket joints, the keyboard of the ear with its three thousand strings, and the hundred other equally ingenious contrivances that make up this moving house of flesh, most of them working so automatically and perfectly that it is only on the occasions that they get out of order that man takes any thought of the complicated mechanisms and delicate adjustments by which he walks and talks and breathes.

"In former days life and mind were fancied to be powers only loosely connected with the grosser flesh into which they were injected. But the investigations of modern physiologists have shown the connection of the vital and mental with their material organs to be of the closest kind....

"Even the mind is dependent on its wheels, its nervous mechanism. Slice off, layer by layer, a pigeon's brains and in the same

measure you pare off its power of feeling and of thought. Each of our senses—sight, hearing, smell, language—has its respective brain-center. Cut out this cerebral seat and the corresponding faculty disappears....

"All these mechanical conditions of life have to be admitted by the candid mind. It is only in the minute and curious detail into which modern research has pushed its probe that there is anything new in this line of facts. The essential truth that a sound mind always depends upon a sound body has been acknowledged for centuries.

"But equally true and equally to be acknowledged is the converse—that for the body's soundness and activity there is needed a healthy and active spirit; it is equally evident that flesh needs soul as much as soul needs flesh.

"The materialist, concentrating his attention solely on the mechanical side of life, of which I have been speaking, would present this as the sum total of vital existence. Animals and men, the lowest star fish and the greatest of poets, (he tells us) are all just so many machines. The food supply determines the egg and the egg produces the bird or bee. As are the respective environments, sense-impressions and links of association, so must be the man's ideas.

"'Without phosphorous no thought,' was the favorite adage of the German man of science, Moleschott. According to naturalistic monism, every act is predetermined by its conditions before it arises. Free choice is a myth, and an idea not generated or conditioned by the physical environment is a chimera. He who is most confident of the dominant power to direct his course is the veriest bit of drift-wood in the eddies of inevitable destiny.

"Such are the superficial dicta of the materialists....If it [the body] is an engine, then it is one that contains within an automatic registry of the experience of its ancestors for centuries; and as Prof. J. Arthur Thomson says: 'It is a self-stoking, self-repairing, self-preservative, self-adjusting, self-increasing, self-reproducing engine.'"

MIND INDEPENDENT OF THE MACHINERY.

"Who ever knew a machine to mend its own breaks and replenish its own wastes? It is by this super-mechanical power, ever superintending, remaking and over-ruling the ordinary chemic and

physical tendencies that would disintegrate its parts, that every animate organism lives....

"The mind has a power independent of the forces, whether material or social, pressing upon it, that may properly be called 'the sovereignty of the self in willing.' Behind all the cerebral machinery there hide, as the main spring that moves it, those noble powers by which man is a living soul and a child of God.....

"Physical force is a constant quantity. But the moral power of the still small voice draws aid from an inexhaustible source to supply whatever energy it needs to overcome the tide of temptation.

"The limited outer view of things that leads so many to a materialistic solution of the great 'World Riddle' is as superficial as it is depressing."

THE EXPLANATIONS OF MATERIALISM INSUFFICIENT.

"Candid Christian thought must admit the mediation of these mechanisms and wheels—the wheel of evolution, the wheel of heredity, of struggle for existence, of physical conditions and environment, of unbroken order. But scientific thought, if that also is candid, must recognize the living spirit within the wheels as even more essential....

"The materialist who explains life and thought and all the other thousand wonders of the world as but re-arrangements of an original stock of energy and motion in the primal nebula only accounts for the continuance of the world's activities in some shape or other. This account does not explain the wise and orderly direction and harmony of these activities. To account for that we must have a sufficient wisdom and beneficence in the First Cause.....

"That which makes evolution a process of real progress, not a mere swinging round the circle, is the progressive saturation of matter by spirit which it exhibits.....

"In the processes of evolution it is the influences from a higher plane that especially accelerate the development of life. How slow was the upward climb of the vegetable kingdom while its progress was carried forward chiefly by the influence of the environment, fortuitous variation and natural selection.....But when the higher forces of animal desire and visual pleasure and esthetic taste came to act upon it, as bee and moth and butterfly became intermediaries in the work of vegetable union and reproduction, what an amazing diversity of form and glory of adornment, and what rapid ascent in complex organization took place!....If the soul of animal and man

has done so much in evolution, how much more ought we to credit to the over-soul?

"When the air plant, hung up in a room, gains weight and substance, we know there must be in the air itself a source of nutrient supply. So when the minds of men grow and burgeon without visible feeding, we know it is by drawing in and assimilating the invisible spiritual nutriment. It is this continuous communion of the finite with the infinite that we call revelation.....

"We feel justified in saying that feeling, will and thought will be found behind *all* the physical processes of the world as their cause and essence. It is not because of certain breaks in the chain of causality, certain gaps in the line of development of the animal world, or certain missing links between the brute and man that materialism is unsatisfactory and that physical nature demands a God to supplement its insufficiencies. It is for far profounder reasons: it is because all order implies reason; all change implies force; all force implies will. The great tree of life should ever be thought of as an endogenous organism, growing not from without inward, but from within outward.....

"The omniscience of the Infinite One, by its wise provisions, by its skilful, automatic self-adjustments and by the transforming power of the soul's chemistry, provides for the good of all his creatures. Love everywhere hides within these laws. Its pains are but danger signals; its penalties are correctives. This changeless providence, hurting us only when we transgress the divine laws, works ever for greater good. This rigid uniformity and intermediate machinery which we are obliged to master is the means of our education and spiritual development.

"In our personal life and in our interpretation of nature the secret of peace, power and knowledge lies in recognizing these two complementary facts—the outer mechanism and the inner life."

THE GOD PROBLEM.

"What is the *motor power* that has carried the world forward through these countless and constant changes?....

"Matter has no power to move itself. It possesses no spontaneity of action. An essential idea of matter, necessary to all scientific dealing with it, is that of its inertness. If a mass of matter could start itself into motion, or bring itself to a halt, or alter the direction of its motion without the action of something outside of itself, no science of it would be possible."

ARGUMENTS AGAINST THEISM ANSWERED.

"If the world (as a scientific friend incisively asked me) had a creator, or its organic forms were moulded into their present shapes and conditions by a reasonable being, would he begin to make a one-toed horse by first making a five-toed creature that climbed trees? To produce a hen, would he start out by making eggs? Or when this creative power wished to make a man, would he, instead of aiming and working directly toward the goal, begin at the bottom of the biologic series by making an ascidian and then change it into a lemurine creature or some other lower animal and then transform that into a simian, and so, by a lengthy circuit, develop the human being, retaining in him numerous survivals of his past which now are apparently quite useless?

"These satiric queries are undoubtedly telling. But do they necessarily compel us to infer absence of purpose, which is the conclusion drawn by Professor Haeckel?

"How is it with a large part of the most rationally planned human work? Does it not accomplish its purpose by decidedly circuitous methods? It is notorious how the iron-moulder begins by making the sand matrix and then breaks it and throws it away. The engineer who builds a stone arch, first puts up the false timber work and then, when he has got his stones in place, pulls down his first wooden structure. Shall we say that the engineer and the iron-moulder have no plan?....In our English language how many silent letters are there, of no use whatever except as historic monuments of the former spelling and the course of linguistic development!

"Shall we say therefore that there is no purpose in the work of the tailor and printer and that intelligence has had nothing to do with the evolution of language or costume? Is it not possible that the intelligence that works in nature may have a similar historic or esthetic sentiment? Is it not possible that the divine mind (like human minds) may choose to make circuits provided he can thereby accomplish his ends more easily?....

"For my part, I do not see why a theist who maintains that the facts of nature bespeak intelligence in their source is obliged to maintain, also, that nature is as yet a completed work or that the mind, immanent in our part of the cosmos and guiding it, is omniscient.

"While the theist believes in the existence of a supreme being, he may, without inconsistency, suppose that the actual world-building of our solar system may have been delegated to some subordinate divinity, who, though superhuman and wondrously wise and skilful, was not either all-wise or all-powerful. At least, the thinker who has become an evolutionist will, if he is consistent, never regard that stage and state of nature in which we now live as a finished result beyond which there is to be no more progress."

A WORTHY CONCEPTION OF GOD.

"For the full satisfaction of the religious instincts, God himself should be recognized as having direct participation in the operations of the world. The spiritual emotions require a present and active God, not an absentee ruler. Our religious intuitions can no more tolerate the idea that the power governing the universe should be blind or subconscious than the reason can tolerate that conception of it that makes it capricious and arbitrary. Only a conscious divine love and life can claim the spirit's loyalty and be recognized by the human soul as sufficiently superior to itself to be worthy of worship. The idea of the world as a titan machine, started and left to itself, is inconsistent with any elevated idea of God.....

"Science is daily coming more and more to the conviction that the cosmos is (to use Humboldt's striking phrase) 'a living whole,' an organism everywhere throbbing with vital power and sensibility struggling for its unfolding into breathing, knowing creature forms. ....The dynamic source of this ceaseless transformation play is a grand energy, more than physical, ever acting, out of an exhaustless life, and from this higher fountain sending down the streams of vitality which circulate through all the veins of the vast, out-spreading cosmos. But energy, according to the testimony of our most eminent philosophers and men of science, we know only as connected with conscious effort, the push or the resistance of the will. Thus at length the vast universe, in all its changing states, its varied phenomena and processes, is found to be a manifestation of personal volition and the action of that guiding mind without which there can be no pressure, effort or direction. As, then, we have to suppose that this guiding mind and energizing will pervade the cosmos wherever energies act, of whom else can they be the attributes than of the One only Infinite—the omnipresent God?"

THE MELANCHOLY TEACHING OF TO-DAY.

"The older and sterner forms of Christian theology, by their dogmas of predestination and man's natural inability, have been terribly discouraging to human efforts, at least in the moral field..... For many long generations these theological dogmas lay like iron fetters on the mind of man, chaining the will and hardening the heart. Though in many quarters they still remain, happily they are now fast dissolving beneath the sunlight of modern thought.

'But as these bonds are losing their power, modern science and philosophy are forging new chains, subtler still. From all sides, descend about us the steel wires inscribed: 'Circumstances make the man.' Every act, we are told, is the inevitable outcome of its preceding condition. Every seeming choice is the compulsion of the stronger motive. Free-will is an illusion, exploded now by science. Crime and vice have their averages calculated by the statistician. There were so many hundred murders, so many thousand cases of arson or embezzlement in each of the last ten years. There will be again the same number on the average in the next ten years. Virtue and vice are therefore subject to fixed laws and physical causes, like the return of winter and summer. They are 'merely products of nature,' as Taine says, 'just like sugar and vitriol.'

"The corroding influence of this growing materialism affects all the departments of life. It dissolves the sense of obligation and snatches the crown from virtue to put it on the heads of fact and force.....

"Against this reduction of humanity to a helpless victim of circumstances every virile human being ought vigorously to protest. The soul of man is more than its conditions. The human will is the helm of every human course.

"Do not, however, misunderstand me. I do not mean that human volition, even the most resolute, can do anything that it desires. Our will is by no means wholly free. The term 'free will' describes clumsily and inexactly the great truth that it aims to express. The truth would be better described as the mastership of the mind in choosing and willing."

MR. BIXBY A DUALIST.

We will here make one comment only on Mr. Bixby's advanced view of the old conception of teleology. Mr. Bixby is still a dualist. He extols the spirit that resides in the wheels and regards the

mechanism of the machinery which the spirit utilizes as something alien to spirit. We believe that both spirit and machine are one, and the universal dominance of the laws of form determining the detailed uniformities of motion, commonly called mechanics, is by no means a depressing or melancholy thought. The laws of form are the very means in which spirit reveals itself. The human mind is a product of these laws and their eternality may very well be conceived as God immanent in the cosmos, as the divinity which rules its destinies, as the spirit in the wheels. Keep in mind, however, that there are not two things, the spirit and the wheels, but there is one reality. The cosmic order conceived as the norm of all motions is the spirit, and the details of its actualization are the wheels. Every detailed piece of its mechanism is a direct manifestation of the spirit.

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